

ismael

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Use Case Scheduling

Rank	Use Case Name	Justification
Unspecified	Update ALOE++	
Unspecified	Runs Waveform	
Unspecified	WaveLib_Alice	
Unspecified	ModLib_Bob	
Unspecified	ALOE Source	

Use Case Ranks

Rank	Description
Low	
Medium	
High	

Stereotypes

Una Cara		
UseCase		
Tagged Value Definitions	Level	l
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 12, 2012 2:06:52 AM
	Туре	Enumeration
	Enumeration Values	Summary, User, Subfunction
	Complexity	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 12, 2012 2:06:52 AM
	Туре	Enumeration
	Enumeration Values	Low, Medium, High
	Use Case Status	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 12, 2012 2:06:52 AM
	Туре	Enumeration
	Enumeration Values	Name Only, Initial, Base, Complete, Deferred
	Implementation Status	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	
		Sep 12, 2012 2:06:52 AM Enumeration
	Type Enumeration Values	Scheduled, Started, Partially Complete, Complete, Partially Deferred
	Preconditions	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 12, 2012 2:06:52 AM
	Туре	Multi-line Text
	Post-conditions	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 12, 2012 2:06:52 AM
	Туре	Multi-line Text
	• • •	

Author	
Author	ismael
Create Date Time	Sep 11, 2012 10:28:41 PM
Last Modified	Sep 12, 2012 2:06:52 AM
Туре	Text
Assumptions	
Author	ismael
Create Date Time	Sep 11, 2012 10:28:41 PM
Last Modified	Sep 12, 2012 2:06:52 AM
Туре	Multi-line Text

	Туре	Multi-line Text		
requirement				
Tagged Value Definitions	Text	Text		
	Author	ismael		
	Create Date Time	Sep 11, 2012 10:28:40 PM		
	Last Modified	Sep 12, 2012 2:06:51 AM		
	Туре	HTML Text		
	ID			
	Author	ismael		
	Create Date Time	Sep 11, 2012 10:28:40 PM		
	Last Modified	Sep 12, 2012 2:06:51 AM		
	Туре	Text		
	Source	i-m		
	Author	ismael		
	Create Date Time	Sep 11, 2012 10:28:40 PM		
	Last Modified	Sep 12, 2012 2:06:51 AM		
	Туре	Text		
	kind			
	Author	ismael		
	Create Date Time	Sep 11, 2012 10:28:40 PM		
	Last Modified	Sep 12, 2012 2:06:51 AM		
	Туре	Enumeration		
	Enumeration Values	Functional, Performance, Interface		
	verifyMethod			
	Author	ismael		
	Create Date Time	Sep 11, 2012 10:28:40 PM		
	Last Modified	Sep 12, 2012 2:06:51 AM		
	Туре	Enumeration		
	Enumeration Values	Analysis, Demonstration, Inspection, Test		
	•			

risk		
Author	ismael	
Create Date Time	Sep 11, 2012 10:28:40 PM	
Last Modified	Sep 12, 2012 2:06:51 AM	
Туре	Enumeration	
Enumeration Values	High, Medium, Low	
status		
Author	ismael	
Create Date Time	Sep 11, 2012 10:28:40 PM	
Last Modified	Sep 12, 2012 2:06:51 AM	
Туре	Enumeration	
Enumeration Values	Proposed, Approved, Rejected, Deferred, Implemented, Mandatory, Obsolete	

d	a	ta	L)	y	p	е

folder

folder

datatype

device

use

Interface

Extend

Include

deploy

enumeration

BasicInterval

Documentation Basic Interval distribution - value between min and max inclusive

Tagged Value Definitions	min	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 14, 2012 11:41:40 AM
	Default Value	0.0
	Туре	Floating Point Number
	max	
	Author	ismael
	Create Date Time	Sep 11, 2012 10:28:41 PM
	Last Modified	Sep 14, 2012 11:41:40 AM
	Default Value	0.0
	Туре	Floating Point Number

DistributedProperty

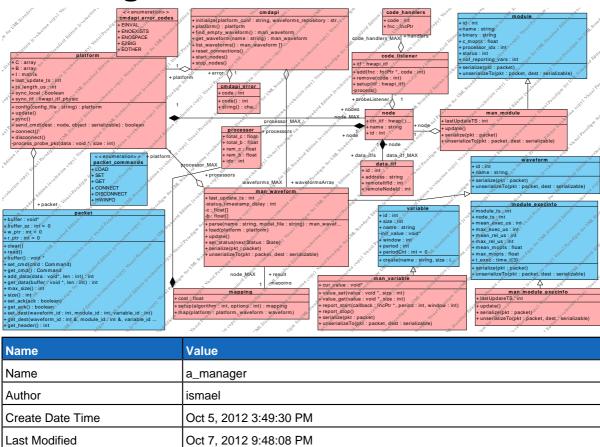
localPostcondition

ORM Abstract Persistable

import

Class Diagram

a_manager



Summary

Name	Documentation
cmdapi_error_cod	es
cmdapi	The front-end to the CmdAPI Interface. Does not add any extra functionality except for facilitating the platform management.
	On initialize(), creates a CmdPlatform object and nof_waveforms CmdWaveform objects. Those classes implement the platform management. The CmdFrontEnd just implements some functions to get the CmdWaveform object from the array.
	Typically, an object of this class is invoked by a thread running in the manager node (any node in the platform) with non-rt priority. This thread is in charge of parsing stdin user commands and calling the appropriate methods for each class. This class may also be used from a GUI, for instance.
code_handlers	Database of handlers associated to an Interface
module	Stores the attributes of waveform module.

platform

node:

The CmdPlatform class manages the hardware parts of the platform. This config() function does not follow the platform-independence rules and is platform-dependant, because it reads the platform configuration file, which is particularized for a given platform (in this case, linux platform). The rest of the functions are platform-independent.

Sample platform configuration file format (libconfig format, see http://www.hyperrealm.com/libconfig/test.cfg.txt):

```
platform:
timeslot=100;
                       // in microseconds. The time-slot is unique for
the platform.
/* other platform-wide options */
mapping:
 algorithm="tw";
 options="";
};
manager:
 ip_address="192.168.1.1"; // IP address of the host where the
manager will be executed
 clock_local=TRUE;
                           // If it runs in a node, it can obtain the
timing using shared memory IPC. If set to false, it will obtain timing from
synchronization.master
};
network:
 ctrl ={port=7000; proto="tcp";} // The manager connects to each
node using this port
 probe={port=7001; proto="udp";}
                                        // The manager connects to
each node using this port
 sync ={port=7002; proto="udp";} // Each node creates a listening
socket on this range of ports
 data ={ports=[7003,7010]: proto="udp";} /* These are the ports used
for data interfaces. Each port is used to open a socket for every module-
to-module link.
                            In this example, each physical interface
creates 7 ports, therefore up to logical links between modules can be
used
                             in this physical interface */
};
};
```

```
name="node1";
ip address=["192.168.1.1","224.0.0.1"]; /* Comma-separated
multiple ip's are supported.
                                     Specifying a multi-cast address is
useful for continuous synchronization with several nodes */
cpu={mops=XXX; mbps=YYY; };
scheduling={type=""; options=""; };
dac=(
    {type="uhd"; address="usrp1"; options=""; }, // This indicates
node1 has physical access to a AD/DA converter. supported
types={"uhd","x5"}
                                 // options string is passed as a
parameter to DAC.create() function. See particular DAC documentation
    { /* other dacs */ }
  );
other_options:
    { rt_control="soft";
                                /* RT-Fault if first module ("soft") or last
module ("hard") still executing at begin of timeslot */
      rt fault="kill";
                             /* Kill waveform ("kill") or just print
warning message ("print") */
      kernel_prio=60;
                                /* Kernel timer thread priority
(default=90) */
      proc_prio=59;
                                /* processor threads priority
(default=89) */
      /* The following three optional values control the amount of
memory that is preallocated at boot */
      max_waveforms=20;
                                     /* (optional) maximum number of
waveform objects that can be used. Default=20 */
      max modules x waveform=20;
                                          /* (optional) maximum
number of module objects per waveform that can be used. Default=20 */
      max_variables_x_module=20;
                                        /* (optional) maximum number
of variable objects per module that can be used. Default=20 */
      max modules x node=20;
                                       /* (optional) maximum number
of module objects per node that can be launched. Default=20 */
      max_queues_x_node=20; /* (optional) maximum number
of gueues per node that are created. Default=20 */
    };
};
node:
             // node2 has IP address 192.168.1.2
name="node2";
ip_address=["192.168.1.2"];
cpu={mops=XXX; mbps=YYY; };
scheduling={type=""; options=""; };
```

```
other_options { rt_control="hard"; rt_fault="print"};
                  synchronization:
                       master="node1":
                       source="timer";
                                           /* Options: "timer" for local timer; "dac://
                  dac name" to get clock from dac interrupts (master node needs access
                  to the dac) */
                       continuous_mode=TRUE; /* Sends one packet at the beginning of
                  the timeslot, which drives the slave timeslot clock. */
                                     /* If FALSE, slaves request synchronization packet
                  every "period" timeslots */
                       period=100;
                                         /* Synchronization period. Ignored if
                  continuous_mode=FALSE */
                       multicast=TRUE;
                                           /* If platform.manager.sync.proto="udp" and
                  continuous mode=TRUE, using multicast has better performance. */
                  };
                  data_interfaces= (
                       {src="node1"; dst="node2"; bw=10.0; duplex="half";
                                                                               /* node1
                  has an output interface to node2. bw is the interface bandwidth in MBPS
                                                          /* "nodeName:IPindex"
                  optionally indicates the IP index in ip_address (default=0)
                       {/* more interfaces here */}
                       );
code_listener
                  Adds a set of callback-code pairs to an interface. When a new packet
                  arrives, it calls the callback associated to the code that matches the first
                  32-bit word of the packet. It is used for asynchronous node->manager
                  communication. Basically for statistics reports and execution error
                  notifications.
  cmdapi_error
node 📑
                  A node is a collection of processors sharing memory. It may have data
                  interfaces to other nodes. It implements Serializable interface and just
                  copies all attributes
man_module
                  Inherits from General. Module class. Part of the CMDAPI, used to update
                  module's variables or execinfo information
processor
                  A processing unit inside a Node (e.g. a core in a multi-core system).
                  By definition, it must share memory with other Processors in the Node.
                  Therefore, only one instance of an ALOE-Node object runs on each
                  Implements serialize and unserializeTo methods. Just copies all
                  attributes.
  packet commands
                  Command type constants
```

waveform	Used by the node to save the loaded waveforms, its modules and variables. At LOAD command, the class is received and serializedTo() a free Waveform object instance. Then waveform attributes, modules and variables and all their attributes are created on pre-allocated objects instances.
ada_itf	A physical data interface connects one node with another. This is the interface used by modules data exchange. Implements Serializable interface and just copies/saves attributes in both methods.
man_waveform	Inherits from General. Waveform class. After the waveform is loaded to a platform, the class allows to send status change commands and update the local objects with the remote ALOE-Node waveform objects. A waveform must be parsed (parse()) prior to being loaded (load()).
	Sample waveform configuration file:
	modules: {
	convcoder:
	binary="convcoder1.0.so"; proc=XXX // in mopts
	outputs=(("output1", "decoder", "input1", 0.3), /* localItfName, remoteModuleName, remoteItfName, BW requirements (in mbpts) */ ("output2", "otherMod", "output2", 1));
	<pre>variables=((name="code"; value=[0x79,0x10,0xf4];), (name="blocksize"; value=100;)); };</pre>
	decoder: {
	binary="decoder1.2.so"; proc=XXX // in mopts
	inputs=("input1", "convcoder", "output1"); /* Inputs do not specify BW. Must coincide with output interface */ outputs=("output1", "sink", "input1", 0.1);
	variables=((name="code"; value=[0x79,0x10,0xf4];), (name="blocksize"; value=100;), (name="SNR"; value=3.2;));

```
|};
                  decoder:
                       binary="decoder1.2.so";
                       proc=XXX // in mopts
                       inputs=( "input1", "decoder", "output1");
                  };
                  options:
                       max_delay_us=2000;
                                               /* This is currently not in use */
                       pre mapping=(
                           ( "decoder", "sink"),
                           ( /* another vector of joined modules */));
module_execinfo
                  The class attributes save information relative to the execution of the
                  module.
variable
                  A module variable is a variable that can be viewed (get) or modified
                  (set) by the CMDAPI or any other module of the same waveform. This
                  interaction is always *asynchronous* and there is no guarantee in terms
                  of timings.
                  An initialization value can be defined for a variable. In that case, it is
                  specified in the .app file and sent to the Nodes during the waveform
                  load phase. The waveform modules can restore their variables to the
                  initialization value any time.
                  Those variables which are not specified in the .app are not available to
                  the manager (i.e. there is any ModuleVariable object associated to the
                  Module object) until the module calls the SWAPI.InitVariable() function
                  and the manager calls the moduleObj.update() or waveformObj.update()
                  functions. It is recommended that the modules initialize their variables
                  during INIT() and the manager calls waveformObj.update() after a
                  successful INIT.
                  This class is used by ALOE-Node. The CMDAPI uses the CmdVariable,
                  which inherits from this class.
packet
                  This class generates and reads the contents of a control packet,
                  managing the specific header requirements (in the future, should support
                  different kinds of endianness). The buffer is statically allocated at object
                  creation.
                  Call pkt.add_data() to generate the packet before transmitting the
                  pkt.buffer() buffer of size pkt.size().
                  At reception, the user must call pkt.read() before using it.
                  The maximum control packet size is 64 Kbytes. Control packets in ALOE
                  include a header with 4 32-bit words:
                  1) Packet Info
                  2) Destination Waveform Id
```

	Destination Module Id Destination Variable Id
	The first word (Packet info) contains the following information (from LSB to MSB):
	1) 07 MANAGER->NODE: Magic word to check if it is a control packet. 0xAF NODE->MANAGER: 0xF0 if command successful or 0x0F if command error. 2) 815 command word (integer, up to 256 commands are supported) 3) 1631 packet size in bytes (integer, up to 65536 bytes can be transferred)
	Data follows after.
man_variable	Inherits from General.ModVariable. Part of the CMDAPI. Adds functionality to set or obtain variable values from the distributed modules.
mapping	This class runs the waveform-to-platform mapping algorithm and stores the result. The mapping procedure is as follows: 1) Create an object instance 2) call to setup() to configure the mapping algorithm 3) call to map(platform,waveform) to map "waveform" object to "platform" object 4) +result is an array of nof_nodes waveforms, one for each waveform. 5) The processorId attribute of every module is filled during map() with the processor id in the node it has been mapped to
man_module_exe	infinerits from General.ModExecInfo class. Part of the CMDAPI, adds functionality to retrieve module's ExecInfo attributes

Details

cmdapi_error_codes

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	enumeration
Author	ismael
Create Date Time	Oct 7, 2012 9:30:27 PM
Last Modified	Oct 7, 2012 9:40:24 PM

Attributes

public EINVAL				
Author	ismael			
Create Date Time	Oct 7, 2012 9:	31:13 PM		
Last Modified	Oct 7, 2012 9:	40:24 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public ENOEXISTS			
Author	ismael		
Create Date Time	Oct 7, 2012 9:31:16 PM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false	,	

public ENOSPACE			
Author	ismael		
Create Date Time	Oct 7, 2012 9:31:20 PM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false	-	
Read Only	false		
Leaf	false		

public E2BIG				
Author	ismael			
Create Date Time	Oct 7, 2012 9:	31:48 PM		
Last Modified	Oct 7, 2012 9:	40:24 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public EOTHER				
Author	ismael			
Create Date Time	Oct 7, 2012 9:	31:53 PM		
Last Modified	Oct 7, 2012 9:4	40:24 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false	,		
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

cmdapi

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The front-end to the CmdAPI Interface. Does not add any extra functionality except for facilitating the platform management. On initialize(), creates a CmdPlatform object and nof_waveforms CmdWaveform objects. Those classes implement the platform management. The CmdFrontEnd just implements some functions to get the CmdWaveform object from the array.

	Typically, an object of this class is invoked by a thread running in the manager node (any node in the platform) with non-rt priority. This thread is in charge of parsing stdin user commands and calling the appropriate methods for each class. This class may also be used from a GUI, for instance.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 9:40:24 PM

Operations

public initialize (platform_	_conf : string, waveforms_rep	ository : string)	
Parameters	platform_conf		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 11:53:28 AM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	string	
	Direction	inout	
	waveforms_repository		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 11:53:28 AM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	configuration file. Then reads the wave nof_waveforms Cmomodel file in the dire	Creates the CmdPlatform object from the platformConfPath configuration file. Then reads the waveformsPath directory and creates up to nof_waveforms CmdWaveform objects, one for each waveform model file in the directory (.app extension) Calls to CmdPlatform.connect()	
Author	ismael		
Create Date Time	Sep 14, 2012 11:52:22 AM		
Last Modified	Oct 5, 2012 1:47:35 PM		
Ordered	false		
Unique	true		
Query	false		

public platform () : platform		
Static	false	
Leaf	false	

Documentation	returns the platform object
Author	ismael
Create Date Time	Sep 14, 2012 11:54:18 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public find_empty_waveform () : man_waveform		
Static	false	
Leaf	false	
Documentation	Returns the first CmdWaveform Object in the waveformsArray which is not associated to any waveform.	
Author	ismael	
Create Date Time	Sep 18, 2012 1:35:17 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public get_waveform (name : string) : man_waveform		
Parameters	name	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:54:18 AM
	Last Modified	Sep 14, 2012 11:59:52 AM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Documentation	returns the CmdWaveform object associated to the waveform "name"	
Author	ismael	
Create Date Time	Sep 14, 2012 11:53:47 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public list_waveforms () : man_waveform	
Static	false
Leaf	false

Documentation	returns the array of CmdWaveforms objects that where parsed from the directory passed to the initialize function.
Author	ismael
Create Date Time	Sep 14, 2012 11:53:30 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Type Modifier	0
Ordered	false
Unique	true
Query	false

public reset_connections ()	
Static	false
Leaf	false
Documentation	Calls cmdPlatform.connect() and then cmdPlatform.disconnect()
Author	ismael
Create Date Time	Sep 26, 2012 10:38:47 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public start_nodes ()	
Static	false
Leaf	false
Documentation	rsh runcf on all nodes
Author	ismael
Create Date Time	Sep 26, 2012 12:22:59 PM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public stop_nodes ()	
Static	false
Leaf	false
Documentation	rsh killcf on all nodes
Author	ismael
Create Date Time	Sep 26, 2012 12:23:04 PM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true

Query false		false
---------------	--	-------

Relationships

Relationships		
Unnamed Association		
To (platform)	Name	Value
	End Model Element	platform
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	public
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 7, 2012 9:40:24 PM	
Derived	false	

Unnamed Association			
To (waveformsArray)	Name	Value	
	End Model Element	man_waveform	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	waveforms_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false	false	
Leaf	false		
Visibility	Unspecified		
Author	ismael	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

Unnamed Association			
To (error)	Name	Value	
	End Model Element	cmdapi_error	
	Author	ismael	
	Create Date Time	Oct 7, 2012 9:30:59 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified	Unspecified	
Author	ismael	ismael	
Create Date Time	Oct 7, 2012 9:30:59 PM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

code_handlers

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Database of handlers associated to an Interface
Author	ismael
Create Date Time	Sep 19, 2012 5:27:21 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Attributes

public code : int						
Author	ismael					
Create Date Time	Sep 19, 2012	5:27:26 PM				
Last Modified	Sep 19, 2012	5:37:09 PM				
Туре	o int					
Allow Empty Name	false					
Getter	false		Setter		false	
Derived	false					
Multiplicity	Unspecified	Unspecified				
Aggregation	None	None				
Derived Union	false					
Read Only	false					
Leaf	false					

public fnc : fncPtr					
Author	ismael	-			
Create Date Time	Sep 19, 2012 5:27:33 PM	1			
Last Modified	Oct 3, 2012 12:03:28 PM				
Туре	fncPtr				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

Relationships

Unnamed Association						
From	Name	Value				
	End Model Element	code_listener				
	Author	ismael				
	Create Date Time	Sep 19, 2012 5:27:57 PM				
	Provide Property Getter Method	false				
	Provide Property Setter Method	false				
	Multiplicity	Unspecified				
	Visibility	Unspecified				
	Aggregation Kind	Aggregation				
	Navigable	true				
	Derived	false				
	Derived Union	false				
	Read Only	false				
	Static	false				
	Leaf	false				
Abstract	false					
Leaf	false					
Visibility	Unspecified	Unspecified				
Author	ismael	ismael				
Create Date Time	Sep 19, 2012 5:27:57 PM	Sep 19, 2012 5:27:57 PM				
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM				
Derived	false					

module

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Stores the attributes of waveform module.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 8:25:24 PM

Attributes

public id : int						
Documentation	•	Unique number (in the waveform) generated automatically in the constructor.				
Author	ismael					
Create Date Time	Sep 12, 2012	1:50:47 AM				
Last Modified	Sep 21, 2012	Sep 21, 2012 12:15:33 AM				
Туре	int	int				
Allow Empty Name	false					
Getter	false	Setter	false			
Derived	false					
Multiplicity	Unspecified					
Aggregation	None	None				
Derived Union	false					
Read Only	false					
Leaf	false					

public name : string					
Author	ismael				
Create Date Time	Sep 12, 2012 1:50:47 AM				
Last Modified	Sep 17, 2012 5:48:10 PM				
Туре	string				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public binary : string						
Documentation	it can be a s	name of the binary, not the full path. Depending on the platform it can be a stand-alone executable (program) or a library which is dynamically loaded.				
Author	ismael	ismael				
Create Date Time	Sep 12, 2012 1	Sep 12, 2012 1:50:47 AM				
Last Modified	Sep 21, 2012 1	2:15:33 AM				
Туре	string					
Allow Empty Name	false					
Getter	false	false Setter false				
Derived	false	false				
Multiplicity	Unspecified					

Aggregation	None
Derived Union	false
Read Only	false
Leaf	false

public c_mopts : float						
Documentation	Module pro	cessing re	equirements	in MOPT	S	
Author	ismael		,			
Create Date Time	Sep 12, 2012	1:50:47 AM				
Last Modified	Sep 21, 2012	12:15:33 Al	И			
Туре	float	float				
Allow Empty Name	false	false				
Getter	false		Setter		false	
Derived	false					
Multiplicity	Unspecified					
Aggregation	None	None				
Derived Union	false	false				
Read Only	false	false				
Leaf	false					

public processor_idx : int					
Documentation	Processor id where t	he module has been r	mapped.		
Author	ismael				
Create Date Time	Sep 24, 2012 12:08:33 Pl	M			
Last Modified	Oct 5, 2012 1:57:36 PM				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public status : int						
Author	ismael					
Create Date Time	Oct 2, 2012 1	1:55:35 AM				
Last Modified	Oct 2, 2012 1	2:02:48 PM				
Туре	int					
Allow Empty Name	false					
Getter	false	5	Setter		false	
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false				-	

public nof_reporting_vars : int					
Author	ismael				
Create Date Time	Oct 3, 2012 12:59:14 PM				
Last Modified	Oct 3, 2012 1:03:08 PM				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

Operations

public serialize (pkt : packet)					
Parameters	pkt	pkt			
	Multiplicity	Unspecified			
	Author	ismael			
	Create Date Time	Sep 13, 2012 11:03:03 PM			
	Last Modified	Oct 5, 2012 1:47:35 PM			
	Туре	a packet			
	Direction	inout			
Static	false	false			
Leaf	false	false			
Documentation		Call moduleObj.execInfo.serialize() and moduleObj.variables.serialize() to all variables			
Author	ismael				

Create Date Time	Sep 13, 2012 10:30:12 PM
Last Modified	Oct 7, 2012 8:25:24 PM
Ordered	false
Unique	true
Query	false

public unserializeTo (pk	t : packet, dest : serializable)			
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
	dest			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	for all variables (see	nd call /ariables[i].unserializeTo(moduleObj.moduleVariab moduleVariables.length) leObj.itfs[i].serializeTo() for all nof_itfs		
Author	ismael			
Create Date Time	Sep 14, 2012 1:49:55 PM	Sep 14, 2012 1:49:55 PM		
Last Modified	Sep 24, 2012 1:23:55 PM	Sep 24, 2012 1:23:55 PM		
Ordered	false			
Unique	true			
Query	false			

Relationships

Unnamed Generalization			
То	man_module		
Author	ismael		
Create Date Time	Sep 17, 2012 12:21:07 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Substitutable	false		
Visibility	Unspecified		

platform

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The CmdPlatform class manages the hardware parts of the platform. This config() function does not follow the platform-independence rules and is platform-dependant, because it reads the platform configuration file, which is particularized for a given platform (in this case, linux platform). The rest of the functions are platform-independent.
	Sample platform configuration file format (libconfig format, see http://www.hyperrealm.com/libconfig/test.cfg.txt):
	platform: { timeslot=100; // in microseconds. The time-slot is unique for the platform. /* other platform-wide options */
	mapping: { algorithm="tw"; options=""; };
	manager: { ip_address="192.168.1.1"; // IP address of the host where the manager will be executed clock_local=TRUE; // If it runs in a node, it can obtain the timing using shared memory IPC. If set to false, it will obtain timing from synchronization.master };
	network: { ctrl ={port=7000; proto="tcp";} // The manager connects to each node using this port probe={port=7001; proto="udp";} // The manager connects to each node using this port sync ={port=7002; proto="udp";} // Each node creates a listening socket on this range of ports

```
data ={ports=[7003,7010]: proto="udp";} /* These are the
ports used for data interfaces. Each port is used to open a
socket for every module-to-module link.
                             In this example, each physical
interface creates 7 ports, therefore up to logical links between
modules can be used
                              in this physical interface */
};
node:
name="node1";
ip_address=["192.168.1.1","224.0.0.1"];
                                                   /* Comma-
separated multiple ip's are supported.
                                      Specifying a multi-cast
address is useful for continuous synchronization with several
cpu={mops=XXX; mbps=YYY; };
scheduling={type=""; options=""; };
dac=(
     {type="uhd"; address="usrp1"; options=""; }, // This
indicates node1 has physical access to a AD/DA converter.
supported types={"uhd","x5"}
                                   // options string is passed
as a parameter to DAC.create() function. See particular DAC
documentation
     { /* other dacs */ }
   );
other options:
     { rt_control="soft";
                                /* RT-Fault if first module
("soft") or last module ("hard") still executing at begin of timeslot
       rt fault="kill";
                               /* Kill waveform ("kill") or just
print warning message ("print") */
      kernel prio=60;
                                  /* Kernel timer thread priority
(default=90) */
      proc_prio=59;
                                 /* processor threads priority
(default=89) */
      /* The following three optional values control the amount
of memory that is preallocated at boot */
      max waveforms=20;
                                      /* (optional) maximum
number of waveform objects that can be used. Default=20 */
       max_modules_x_waveform=20;
                                           /* (optional)
maximum number of module objects per waveform that can be
used. Default=20 */
```

```
max_variables_x_module=20;
                                        /* (optional) maximum
number of variable objects per module that can be used.
Default=20 */
      max modules x node=20;
                                        /* (optional) maximum
number of module objects per node that can be launched.
Default=20 */
      max_queues_x_node=20;
                                       /* (optional) maximum
number of gueues per node that are created. Default=20 */
};
node:
              // node2 has IP address 192.168.1.2
name="node2";
ip_address=["192.168.1.2"];
cpu={mops=XXX; mbps=YYY; };
scheduling={type=""; options=""; };
other_options { rt_control="hard"; rt_fault="print"};
synchronization:
    master="node1";
    source="timer";
                        /* Options: "timer" for local timer;
"dac://dac_name" to get clock from dac interrupts (master node
needs access to the dac) */
    continuous_mode=TRUE; /* Sends one packet at the
beginning of the timeslot, which drives the slave timeslot clock.
                  /* If FALSE, slaves request synchronization
packet every "period" timeslots */
                       /* Synchronization period. Ignored if
    period=100;
continuous_mode=FALSE */
    multicast=TRUE;
                         /* If
platform.manager.sync.proto="udp" and
continuous_mode=TRUE, using multicast has better
performance. */
};
data interfaces= (
    {src="node1"; dst="node2"; bw=10.0; duplex="half";
* node1 has an output interface to node2. bw is the interface
bandwidth in MBPS */
                                       /* "nodeName:IPindex"
optionally indicates the IP index in ip_address (default=0)
    {/* more interfaces here */}
    );
```

	=======================================
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 6, 2012 12:30:29 PM

Attributes

public C : array					
Author	ismael				
Create Date Time	Sep 12, 2012 1	:50:47 AM			
Last Modified	Sep 12, 2012 2	2:06:51 AM			
Туре	array	,			
Allow Empty Name	false	false			
Getter	false	false Setter false			
Derived	false	false			
Multiplicity	Unspecified	Unspecified			
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public B : array					
Author	ismael	ismael			
Create Date Time	Sep 12, 2012	1:50:47 AM			
Last Modified	Sep 12, 2012 2	2:06:51 AM			
Туре	array	array			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false	false			
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false				
Read Only	false				
Leaf	false				

public I : matrix					
Author	ismael				
Create Date Time	Sep 12, 2012	1:50:47 AM			
Last Modified	Sep 12, 2012	2:06:51 AM			
Туре	matrix				
Allow Empty Name	false	false			
Getter	false		Setter		false
Derived	false	false			
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false				
Read Only	false				
Leaf	false				

public last_update_ts : int				
Author	ismael			
Create Date Time	Sep 14, 2012 1:08:42 PM			
Last Modified	Oct 5, 2012 1:47:35 PM			
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public ts_length_us : int					
Documentation	Time-slot du	Time-slot duration, in microseconds			
Author	ismael		,		
Create Date Time	Sep 12, 2012	1:50:47 AM			
Last Modified	Sep 21, 2012	12:42:59 AM			
Туре	int	int			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false	false			
Read Only	false	false			
Leaf	false				

public sync_local : boolean				
Author	ismael			
Create Date Time	Sep 26, 2012 1:33:27 PM			
Last Modified	Oct 5, 2012 1:57:36 PM			
Туре	boolean			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public sync_itf : hwapi_itf_physic			
Author	ismael		
Create Date Time	Sep 26, 2012 1:34:39 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Туре	hwapi_itf_physic		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Operations

public config_file : string) : platform				
Parameters	config_file			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	string		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Initializes the HWAPI and reads and parses the platform configuration file with path "configFile". It must be called before calling any other function.			

	1) Parse "configFile" 2) Configure clock: 2.1) If clockLocal==TRUE, call hwapi.attachLocalTime(); 2.2) If clockLocal==FALSE, create sync interface: PhysicItf.create("udp://local_ip:sync_port") mode in name "sync" and save to syncItf 3) For each node 3.1) Create Node class instance 3.2) hwapi.PhysicItf.create("udp://node_ip:ctrl_port") mode out and save itf object address to Node.ctrlItf 3.3) hwapi.PhysicItf.create("udp://node_ip:probe_port") mode out and call Node.probeListener.setup(probeItf). 3.4) Add asyncError to probeItf listeners. Node.probeListener.addCallback(asyncError) 4) Create C, B, I platform model from the nodes and data interfaces specified in the configuration file The function must check that the configuration file parameters are correct, issuing warnings when necessary
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public update ()	
Static	false
Leaf	false
Documentation	For each node, send a HWINFO command. Save the contents of the received packet into node.hwinfo structure
Author	ismael
Create Date Time	Sep 14, 2012 1:08:35 PM
Last Modified	Oct 5, 2012 3:27:28 PM
Ordered	false
Unique	true
Query	false

public sync ()		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 18, 2012 10:15:45 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public send_cmd (dest : node, object : serializable) : boolean				
Parameters	dest	dest		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	node		
	Direction	inout		
	object			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:10:34 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	_		
	Direction	out		
Static	false			
Leaf	false	false		
Documentation	Sends Command to Node destination attaching the sendObj serializable object. Calls sendObj.serialize() function to serialize object data to the packet.			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 5, 2012 1:47:35 PM			
Ordered	false	false		
Unique	true	true		
Query	false	false		

public connect ()		
Static	false	
Leaf	false	
	1) For each node, call node[i].ctrlltf.connect() and node[i].probeltf.connect()	

	3) If syncLocal==false, syncItf.connect()4) For each node, send Cmd.CONNECT command	
Author	ismael	
Create Date Time	Sep 26, 2012 10:34:31 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public disconnect ()		
Static	false	
Leaf	false	
Documentation	 For each node, send Cmd.DISCONNECT command For each node, call node.ctrlltf.close(), node.probeltf.close() call syncltf.close() 	
Author	ismael	
Create Date Time	Sep 26, 2012 10:38:38 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

private process_probe_pkt (data : void, size : int)				
Parameters	data	data		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 9:32:45 AM		
	Last Modified	Oct 4, 2012 10:21:37 AM		
	Type Modifier	*		
	Туре	o void		
	Direction	inout		
	size			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 10:19:03 AM		
	Last Modified	Oct 4, 2012 10:21:37 AM		
	Туре	int int		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation		Processes asynchronous execution error messages from nodes. The format of the asyncError packet is as follows:		

	1st 32-bit word: Waveform id 2st 32-bit word: Module id 3st 32-bit word: Error code Next: errorMsg string @mayChange: For any error messsage!=OK, set STOP status to the waveform that caused it and print message to SDTDOUT.	
Author	ismael	
Create Date Time	Oct 4, 2012 9:31:39 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

Itelationships		
Unnamed Association		
To (nodes)	Name	Value
	End Model Element	node
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	node_MAX
	Visibility	public
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 7, 2012 9:40:24 PM	
Derived	false	

Unnamed Association			
To (packet)	Name	Value	
	End Model Element	acket packet	
	Author	ismael	
	Create Date Time	Sep 12, 2012 2:05:33 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 12, 2012 2:05:33 AM	Sep 12, 2012 2:05:33 AM	
Last Modified	Oct 6, 2012 12:14:27 PM		
Derived	false		

Unnamed Association		
From	Name	Value
	End Model Element	cmdapi
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	public
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 7, 2012 9:40:24 PM	
Derived	false	

Unnamed Association			
From	Name	Value	
	End Model Element	man_waveform	
	Author	ismael	
	Create Date Time	Sep 18, 2012 11:11:43 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	Aggregation	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 18, 2012 11:11:43 AM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

code_listener

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Adds a set of callback-code pairs to an interface. When a new packet arrives, it calls the callback associated to the code that matches the first 32-bit word of the packet. It is used for asynchronous node->manager communication. Basically for statistics reports and execution error notifications.
Author	ismael
Create Date Time	Oct 4, 2012 9:41:48 AM
Last Modified	Oct 6, 2012 12:14:27 PM

public itf : hwapi_itf				
Author	ismael			
Create Date Time	Sep 26, 2012	12:05:53 PM		
Last Modified	Oct 5, 2012 2:20:03 PM			
Туре	hwapi_itf			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Operations

public add (fnc : fncPtr, code : int)				
Parameters	fnc			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 9:42:28 AM		
	Last Modified	Oct 4, 2012 9:51:36 AM		
	Type Modifier	*		
	Туре	fncPtr		
	Direction	inout		
	code			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 10:03:35 AM		
	Last Modified	Oct 4, 2012 10:11:37 AM		
	Туре	int		
	Direction	inout		
Static	false			
Leaf	false			
Author	ismael			
Create Date Time	Oct 4, 2012 9:42:15 AM			
Last Modified	Oct 5, 2012 1:47:35 PM			
Ordered	false			
Unique	true			
Query	false			

public remove (code : int)				
Parameters	code			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 9:42:36 AM		
	Last Modified	Oct 4, 2012 10:11:37 AM		
	Туре	o int		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Author	ismael	ismael		
Create Date Time	Oct 4, 2012 9:42:28 AM	Oct 4, 2012 9:42:28 AM		
Last Modified	Oct 5, 2012 1:47:35 PM	Oct 5, 2012 1:47:35 PM		
Ordered	false	false		
Unique	true			
Query	false			

public setup (itf : hwapi_itf)				
Parameters	itf			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 10:05:22 AM		
	Last Modified	Oct 5, 2012 2:20:03 PM		
	Туре	hwapi_itf		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Sets process() function as a callback to the interface. Use priority 0 (non-realtime)			
Author	ismael			
Create Date Time	Oct 4, 2012 10:04:20 AM			
Last Modified	Oct 4, 2012 10:21:37 AM			
Ordered	false			
Unique	true			
Query	false			

private process ()	
Static	false
Leaf	false
Documentation	Called when a new packet arrives, receives it from the interface and uses the CmdPacket interface to read the first 32-bit word

	of the packet, find the associated handler and call it, passing the packet data pointer and size as first and second parameters.
Author	ismael
Create Date Time	Oct 4, 2012 10:07:36 AM
Last Modified	Oct 4, 2012 10:21:37 AM
Ordered	false
Unique	true
Query	false

Unnamed Association				
To (handlers)	Name	Value		
	End Model Element	code_handlers		
	Author	ismael		
	Create Date Time	Sep 19, 2012 5:27:57 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	code_handlers_MAX		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 19, 2012 5:27:57 PM			
Last Modified	Oct 7, 2012 9:40:24 PM			
Derived	false			

Unnamed Association				
From	Name	Value		
	End Model Element	node		
	Author	ismael		
	Create Date Time	Oct 4, 2012 10:02:35 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Oct 4, 2012 10:02:35 AM	Oct 4, 2012 10:02:35 AM		
Last Modified	Oct 7, 2012 9:40:24 PM			
Derived	false			

■ cmdapi_error

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 7, 2012 9:29:55 PM
Last Modified	Oct 7, 2012 9:40:24 PM

public code : int				
Author	ismael			
Create Date Time	Oct 7, 2012 9	:30:43 PM		
Last Modified	Oct 7, 2012 9	Oct 7, 2012 9:40:24 PM		
Туре	int int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Operations

public code () : int		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Oct 7, 2012 9:30:33 PM	
Last Modified	Oct 7, 2012 9:40:24 PM	
Ordered	false	
Unique	true	
Query	false	

public string () : char	
Static	false
Leaf	false
Author	ismael
Create Date Time	Oct 7, 2012 9:30:36 PM
Last Modified	Oct 7, 2012 9:40:24 PM
Type Modifier	*
Ordered	false
Unique	true
Query	false

Unnamed Association				
From	Name	Value		
	End Model Element	cmdapi		
	Author	ismael		
	Create Date Time	Oct 7, 2012 9:30:59 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 7, 2012 9:30:59 PM	Oct 7, 2012 9:30:59 PM		
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM		
Derived	false	false		

node

Name	Value	
Active	false	
Business Key Mutable	true	
Business Model	false	
Visibility	public	
Leaf	false	
Root	false	
Documentation	A node is a collection of processors sharing memory. It may have data interfaces to other nodes. It implements Serializable interface and just copies all attributes	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	

public ctr_itf : hwapi_itf_physic				
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM	1		
Last Modified	Oct 5, 2012 2:20:03 PM			
Туре	hwapi_itf_physic			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public name : string				
Documentation	Name of the class	Name of the node, as specified in platform.conf in CmdPlatform class		
Author	ismael			
Create Date Time	Sep 12, 2012 1	:50:47 AM		
Last Modified	Sep 21, 2012 1	Sep 21, 2012 12:42:59 AM		
Туре	string	string		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public id : int				
Author	ismael			
Create Date Time	Oct 2, 2012 12:	31:25 PM		
Last Modified	Oct 2, 2012 12:	41:11 PM		
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Unnamed Association			
To (data_itfs)	Name	Value	
	End Model Element	ada_itf	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	data_itf_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

Unnamed Association			
To (processors)	Name	Value	
	End Model Element	processor	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	processor_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

Unnamed Association				
To (probeListener)	Name	Value		
	End Model Element	code_listener		
	Author	ismael		
	Create Date Time	Oct 4, 2012 10:02:35 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified			
Author	ismael			
Create Date Time	Oct 4, 2012 10:02:35 AM	Oct 4, 2012 10:02:35 AM		
Last Modified	Oct 7, 2012 9:40:24 PM			
Derived	false			

Unnamed Association			
From	Name	Value	
	End Model Element	a platform	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	public	
	Aggregation Kind	Composited	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

Unnamed Association				
From	Name	Value		
	End Model Element	man_module		
	Author	ismael		
	Create Date Time	Oct 5, 2012 1:55:35 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 5, 2012 1:55:35 PM	Oct 5, 2012 1:55:35 PM		
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM		
Derived	false	false		

man_module

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Inherits from General.Module class. Part of the CMDAPI, used to update module's variables or execinfo information
Author	ismael
Create Date Time	Sep 17, 2012 12:20:33 AM
Last Modified	Oct 6, 2012 12:14:27 PM

public lastUpdateTS : int				
Author	ismael	ismael		
Create Date Time	Sep 17, 2012	12:24:28 AM		
Last Modified	Sep 17, 2012	12:25:09 AM		
Туре	int			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified			
Aggregation	None	None		
Derived Union	false	false		
Read Only	false			
Leaf	false			

Operations

public update ()	
Static	false
Leaf	false
Documentation	Updates the local object's attributes with the node's attributes. Retrieves also all the variables and execinfo 1) Verify waveform.Status.isLoaded() 2) Send Cmd.GET to dest(module.waveform.Id, module.Id,0) to module.node using module.waveform.cmdPlatform 3) wait for answer and serializeTo(module) 4) update lastUpdateTS with current ts
Author	ismael
Create Date Time	Sep 17, 2012 12:20:55 AM
Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

public serialize (pkt : packet)			
Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 13, 2012 10:30:12 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	a packet	
	Direction	inout	
Static	false		
Leaf	false		

Documentation	Serialize module attributes and call interface.serialize() and variable.serialize() to all interfaces and variables
Author	ismael
Create Date Time	Sep 13, 2012 10:29:07 PM
Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

public unserializeTo (pkt	: packet, dest : serializable)			
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	a packet		
	Direction	inout		
	dest			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false	false		
Leaf	false			
Documentation	Call moduleObj.exed	Call moduleObj.execInfo.unserializeTo(moduleObj.execInfo)		
Author	ismael			
Create Date Time	Sep 14, 2012 1:49:55 PM	Sep 14, 2012 1:49:55 PM		
Last Modified	Sep 24, 2012 1:23:55 PM	Sep 24, 2012 1:23:55 PM		
Ordered	false	false		
Unique	true	true		
Query	false			

Unnamed Association				
To (node)	Name	Value		
	End Model Element	node		
	Author	ismael		
	Create Date Time	Oct 5, 2012 1:55:35 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 5, 2012 1:55:35 PM	Oct 5, 2012 1:55:35 PM		
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM		
Derived	false	false		

Unnamed Generalization			
From	module		
Author	ismael		
Create Date Time	Sep 17, 2012 12:21:07 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Substitutable	false		
Visibility	Unspecified		

processor

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public

Leaf	false
Root	false
Documentation	A processing unit inside a Node (e.g. a core in a multi-core system). By definition, it must share memory with other Processors in the Node. Therefore, only one instance of an ALOE-Node object runs on each Node. Implements serialize and unserializeTo methods. Just copies all attributes.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 6, 2012 12:14:27 PM

public total_c : float				
Documentation	Total proce	Total processor capacity, in MOPS		
Author	ismael			
Create Date Time	Sep 12, 2012	1:50:47 AM		
Last Modified	Sep 21, 2012	12:42:59 AM		
Туре	float	float		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false	false		
Leaf	false			

public total_b : float			
Documentation	Total internal processor bandwidth (i.e. memory bandwidth). In MBPS		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Sep 21, 2012 12:42:59 Al	М	
Туре	float		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public rem_c : float						
Documentation	Remaining p	Remaining processor capacity, in MOPS				
Author	ismael					
Create Date Time	Sep 12, 2012	1:50:47 AM				
Last Modified	Sep 21, 2012	12:42:59 AM				
Туре	float	float				
Allow Empty Name	false	false				
Getter	false	Se	etter		false	
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public rem_b : float				
Documentation	Remaining internal bandwidth (in MBPS)			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 21, 2012 12:42:59 AM	Л		
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public idx : int				
Documentation	Processor index in th	ie node		
Author	ismael			
Create Date Time	Sep 21, 2012 12:37:15 Al	М		
Last Modified	Sep 25, 2012 9:20:42 AM			
Туре	int int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			

Read Only	false	
Leaf	false	

Relationships				
Unnamed Association				
From (node)	Name	Value		
	End Model Element	node		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	Composited		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 7, 2012 9:40:24 PM			
Derived	false			

Unnamed Association						
From	Name	Value				
	End Model Element	mapping				
	Author	ismael				
	Create Date Time	Sep 12, 2012 1:50:47 AM				
	Provide Property Getter Method	false				
	Provide Property Setter Method	false				
	Multiplicity	Unspecified				
	Visibility	public				
	Aggregation Kind	Composited				
	Navigable	true				
	Derived	false				
	Derived Union	false				
	Read Only	false				
	Static	false				
	Leaf	false				
Abstract	false					
Leaf	false					
Visibility	Unspecified	Unspecified				
Author	ismael	ismael				
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM				
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM				
Derived	false					

packet_commands

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	enumeration
Documentation	Command type constants
Author	ismael
Create Date Time	Sep 13, 2012 9:55:48 PM
Last Modified	Oct 6, 2012 12:14:27 PM

public LOAD					
Documentation	Loads a wa	veform			
Author	ismael				
Create Date Time	Sep 13, 2012	9:56:15 PM			
Last Modified	Oct 5, 2012 3:	Oct 5, 2012 3:27:28 PM			
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public SET					
Documentation	Modifies a r	node object instance			
Author	ismael				
Create Date Time	Sep 24, 2012	12:58:38 PM			
Last Modified	Oct 5, 2012 3:	Oct 5, 2012 3:27:28 PM			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public GET				
Documentation	Reads a node object	instance		
Author	ismael			
Create Date Time	Sep 24, 2012 12:58:41 PM	И		
Last Modified	Oct 5, 2012 3:27:28 PM			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public CONNECT					
Documentation	Node conne	Node connects output interfaces			
Author	ismael	,			
Create Date Time	Sep 26, 2012	10:41:28 AM			
Last Modified	Oct 5, 2012 3	Oct 5, 2012 3:27:28 PM			
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false		<u> </u>		
Read Only	false				
Leaf	false			·	

public DISCONNECT					
Documentation	Node close	s all connections			
Author	ismael				
Create Date Time	Sep 26, 2012	10:41:32 AM			
Last Modified	Oct 5, 2012 3:	Oct 5, 2012 3:27:28 PM			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false	false			
Read Only	false				
Leaf	false				

public HWINFO					
Documentation	Obtains hardware inf	Obtains hardware information (+machine structure in HWAPI)			
Author	ismael				
Create Date Time	Oct 5, 2012 3:22:48 PM				
Last Modified	Oct 5, 2012 3:27:28 PM				
Allow Empty Name	false				
Getter	false Setter false				
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

waveform

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Used by the node to save the loaded waveforms, its modules and variables. At LOAD command, the class is received and serializedTo() a free Waveform object instance. Then waveform attributes, modules and variables and all their attributes are created on pre-allocated objects instances.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 9:07:22 PM

public id : int						
Documentation	Automaticall platform.	Automatically generated waveform id. Must be unique in the platform.				
Author	ismael					
Create Date Time	Sep 12, 2012 1	Sep 12, 2012 1:50:47 AM				
Last Modified	Sep 18, 2012 1	Sep 18, 2012 12:34:45 PM				
Туре	int	int				
Allow Empty Name	false					
Getter	false	Setter	false			
Derived	false					
Multiplicity	Unspecified					
Aggregation	None	None				
Derived Union	false	false				
Read Only	false	false				
Leaf	false					

public name : string						
Author	ismael					
Create Date Time	Sep 12, 2012	1:50:47 AM				
Last Modified	Sep 17, 2012	5:48:10 PM				
Туре	string					
Allow Empty Name	false	false				
Getter	false	false Setter false				
Derived	false	false				
Multiplicity	Unspecified	Unspecified				
Aggregation	None					
Derived Union	false	false				
Read Only	false					
Leaf	false					

Operations

public serialize (pkt : packet)				
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Save attributes and call waveform.moduleObj[i].serialize() for all nof_modules			
Author	ismael			
Create Date Time	Sep 13, 2012 10:30:12 PM			
Last Modified	Oct 7, 2012 8:25:24 PM			
Ordered	false			
Unique	true			
Query	false			

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt	pkt			
	Multiplicity	Unspecified			
	Author	ismael			
	Create Date Time	Sep 14, 2012 1:50:19 PM			
	Last Modified	Oct 5, 2012 1:47:35 PM			
	Туре	macket packet			
	Direction	inout			
	dest				
	Multiplicity	Unspecified			
	Author	ismael			
	Create Date Time	Sep 14, 2012 1:50:19 PM			
	Last Modified	Oct 5, 2012 1:47:35 PM			
	Туре	serializable			
	Direction	inout			
Static	false				
Leaf	false				
Documentation	Save attributes to the o waveform.moduleObj[i] instances	bject instance and call .unserializeTo() all nof_modules module			
Author	ismael				
Create Date Time	Sep 14, 2012 1:49:55 PM				
Last Modified	Sep 24, 2012 1:23:55 PM				
Ordered	false				
Unique	true				
Query	false				

Unnamed Generalization	
То	man_waveform
Author	ismael
Create Date Time	Sep 14, 2012 1:12:57 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

data_itf

Name	Value
Active	false
Business Key Mutable	true
Business Model	false

Visibility	public
Leaf	false
Root	false
Documentation	A physical data interface connects one node with another. This is the interface used by modules data exchange. Implements Serializable interface and just copies/saves attributes in both methods.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 6, 2012 12:14:27 PM

public id : int						
Documentation	Unique phys	Unique physical interface id in the node				
Author	ismael	-				
Create Date Time	Sep 12, 2012	1:50:47 AM				
Last Modified	Sep 21, 2012	Sep 21, 2012 12:42:59 AM				
Туре	int	int				
Allow Empty Name	false	false				
Getter	false	Setter	false			
Derived	false	false				
Multiplicity	Unspecified					
Aggregation	None	None				
Derived Union	false	false				
Read Only	false	false				
Leaf	false					

public address : string					
Documentation	Interface address (see platform.conf in CmdPlatform class)				
Author	ismael				
Create Date Time	Sep 12, 2012 1:50:47 AM				
Last Modified	Sep 21, 2012 12:42:59 AM	M			
Туре	string				
Allow Empty Name	false				
Getter	false Setter false				
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public remoteltfld : int						
Author	ismael					
Create Date Time	Oct 2, 2012 1	2:31:35 PM				
Last Modified	Oct 2, 2012 1	2:41:11 PM				
Туре	int					
Allow Empty Name	false	false				
Getter	false		Setter		false	
Derived	false	false				
Multiplicity	Unspecified	Unspecified				
Aggregation	None					
Derived Union	false	false				
Read Only	false					
Leaf	false	1				

public remoteNodeld : int			
Author	ismael		
Create Date Time	Oct 2, 2012 12:31:42 PM		
Last Modified	Oct 2, 2012 12:41:11 PM		
Туре	int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Unnamed Association				
From (node)	Name	Value		
	End Model Element	node		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	Composited		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false	false		
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM		
Derived	false			

man_waveform

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Inherits from General. Waveform class. After the waveform is loaded to a platform, the class allows to send status change commands and update the local objects with the remote ALOE-Node waveform objects. A waveform must be parsed (parse()) prior to being loaded (load()).
	Sample waveform configuration file:

```
modules:
convcoder:
     binary="convcoder1.0.so";
     proc=XXX // in mopts
     outputs=(
     ("output1", "decoder", "input1", 0.3), /* localItfName,
remoteModuleName, remoteItfName, BW requirements (in mbpts) */
     ( "output2", "otherMod", "output2", 1)
     );
     variables=(
     (name="code"; value=[0x79,0x10,0xf4];),
     (name="blocksize"; value=100;)
     );
};
decoder:
     binary="decoder1.2.so";
     proc=XXX // in mopts
     inputs=( "input1", "convcoder", "output1"); /* Inputs do not specify
BW. Must coincide with output interface */
     outputs=( "output1", "sink", "input1", 0.1);
     variables=(
     (name="code"; value=[0x79,0x10,0xf4];),
     (name="blocksize"; value=100;),
     (name="SNR"; value=3.2;)
     );
};
decoder:
     binary="decoder1.2.so";
     proc=XXX // in mopts
    inputs=( "input1", "decoder", "output1");
};
options:
     max_delay_us=2000;
                               /* This is currently not in use */
     pre_mapping=(
          ( "decoder", "sink"),
          ( /* another vector of joined modules */));
```

	}
Author	ismael
Create Date Time	Sep 14, 2012 1:12:35 AM
Last Modified	Oct 6, 2012 12:14:27 PM

public last_update_ts : int				
Documentation	Timeslot of	Timeslot of the last update		
Author	ismael	ismael		
Create Date Time	Sep 14, 2012	Sep 14, 2012 11:56:39 AM		
Last Modified	Oct 5, 2012 1:	Oct 5, 2012 1:47:35 PM		
Туре	o int	o int		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	1			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

private status_timestamp_delay : int				
Documentation	Number of timeslots to delay an status change. Should be larger than the maximum delay (in timeslots) to any Node			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 18, 2012 12:34:45 PM			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

private c : float		
Documentation	vector of computing requirements, in mopts	
Author	ismael	
Create Date Time	Sep 18, 2012 12:47:32 PM	
Last Modified	Sep 18, 2012 12:50:30 PM	

Type Modifier				
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

private b : float				
Documentation	matrix of bandwidth requirements, in mbpts			
Author	ismael			
Create Date Time	Sep 18, 2012	Sep 18, 2012 12:48:11 PM		
Last Modified	Sep 18, 2012	Sep 18, 2012 12:50:30 PM		
Type Modifier	0			
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public parse (name : string, model_file : string) : man_waveform

Parameters	name	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 18, 2012 1:37:29 AM
	Last Modified	Sep 18, 2012 1:38:08 AM
	Туре	string
	Direction	inout
	model_file	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 12:04:24 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Documentation	Parses the waveform configuration file according to its format (specified in this class documentation). This method has to do: 1) generate the (c,b) waveform model 2) create a Module instance for each module and add to modules array 3) create a Variable instance for each variable and add to modules[i].variables array 4) set Status=STOP *NOTE*: Use libconfig file format and library for parsing	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public load (platform : platform)		
Parameters	platform	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 12:22:39 PM
	Last Modified	Sep 18, 2012 11:05:42 AM
	Туре	platform
	Direction	inout
Static	false	

Leaf	false
Documentation	Uses the platform object to load the waveform into the platform. The procedure is: 1) Verify isParsed is true 2) Create a mapping object using Mapping.map() static method, passing the platform and waveform objects as parameters 3) If the mapping is feasible, iterate through the mapping.result waveform objects and send the serialized object to each mapping.node (indices are correlated) with Cmd=WAVEFORM_LOAD 4) Save the mapping object 5) Save the platform object 6) Set the waveform status to LOADED
Author	ismael
Create Date Time	Sep 14, 2012 11:10:43 AM
Last Modified	Sep 19, 2012 5:57:10 PM
Ordered	false
Unique	true
Query	false

public update ()	
Static	false
Leaf	false
Documentation	updates the module's objects with the distributed modules in the platform. 1) Verify Status.isLoaded() 2) Iterate through the mapping.node array and send command Cmd.GET to dest(waveform.Id,0,0) 3) wait for reception command and for each module unserializeTo the local waveform object 4) set lastUpdateTS to current timeslot
Author	ismael
Create Date Time	Sep 14, 2012 11:10:54 AM
Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

public set_status (nextStatus : Status.State)		
Parameters	nextStatus	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:34:33 AM
	Last Modified	Sep 18, 2012 1:20:26 PM
	Туре	Status.State
	Direction	inout

Static	false
Leaf	false
Documentation	Modifies the waveform execution status. The status is first modified locally and, if the transition is valid, a command to the ALOE-Nodes is issued: 1) Verify Status.isLoaded() 2) Call status.next(nextStatus). Continue if the status transition is valid. 3) Iterate through the mapping.node array and send command Cmd.SET to dest(waveform.Id,0,0) and serialize(waveform.Status) 4) wait for reception positive ACK 5) If nextStatus=Status.INIT call waveform.update()
Author	ismael
Create Date Time	Sep 14, 2012 11:21:01 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public serialize (pkt : packet)		
Parameters	pkt	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 13, 2012 10:30:12 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	packet
	Direction	inout
Static	false	
Leaf	false	
Documentation	- Serializes waveform attributes and call module.serialize() for all modules	
Author	ismael	
Create Date Time	Sep 13, 2012 10:29:07 PM	
Last Modified	Sep 24, 2012 1:12:33 PM	
Ordered	false	
Unique	true	
Query	false	

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 1:50:19 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	packet
	Direction	inout
	dest	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 1:50:19 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	serializable
	Direction	inout
Static	false	
Leaf	false	
Documentation	Calls moduleObj.unserializeTo(moduleObj) for each module	
Author	ismael	
Create Date Time	Sep 14, 2012 1:49:55 PM	
Last Modified	Sep 24, 2012 1:23:55 PM	
Ordered	false	
Unique	true	
Query	false	

Unnamed Association			
To (platform)	Name	Value	
	End Model Element	platform	
	Author	ismael	
	Create Date Time	Sep 18, 2012 11:11:43 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false	false	
Visibility	Unspecified	Unspecified	
Author	ismael	ismael	
Create Date Time	Sep 18, 2012 11:11:43 AM	Sep 18, 2012 11:11:43 AM	
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM	
Derived	false	false	

Unnamed Generalization		
From	waveform	
Author	ismael	
Create Date Time	Sep 14, 2012 1:12:57 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	
Substitutable	false	
Visibility	Unspecified	

Unnamed Association				
From	Name	Value		
	End Model Element	cmdapi		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	private		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified	Unspecified		
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 7, 2012 9:40:24 PM			
Derived	false			

Unnamed Association					
From (mapping)	Name	Value			
	End Model Element	mapping			
	Author	ismael			
	Create Date Time	Sep 12, 2012 1:50:47 AM			
	Provide Property Getter Method	false			
	Provide Property Setter Method	false			
	Multiplicity	1			
	Visibility	private			
	Aggregation Kind	None			
	Navigable	true			
	Derived	false			
	Derived Union	false			
	Read Only	false			
	Static	false			
	Leaf	false			
Abstract	false				
Leaf	false				
Visibility	Unspecified	Unspecified			
Author	ismael	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM			
Derived	false				

module_execinfo

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The class attributes save information relative to the execution of the module.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 8:25:24 PM

Attributes

public module_ts : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public node_ts : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public mean_exec_us : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM	1		
Last Modified	Sep 17, 2012 5:48:10 PM	1		
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_exec_us : int						
Author	ismael	ismael				
Create Date Time	Sep 12, 2012 1:	50:47 AM	<u> </u>			
Last Modified	Sep 17, 2012 5:	48:10 PM				
Туре	int					
Allow Empty Name	false	false				
Getter	false		Setter		false	
Derived	false		-			
Multiplicity	Unspecified	Unspecified				
Aggregation	None		_			
Derived Union	false					
Read Only	false					
Leaf	false		,			

public mean_rel_us : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_rel_us : int				
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1	1:50:47 AM		
Last Modified	Sep 17, 2012 5	5:48:10 PM		
Туре	int			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public mean_mopts : float				
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_mopts : float					
Author	ismael	ismael			
Create Date Time	Sep 12, 2012 1:50:47 Af	M			
Last Modified	Sep 17, 2012 5:48:10 Pf	M			
Туре	float				
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified	Unspecified			
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public t_exec : time_t				
Author	ismael			
Create Date Time	Oct 2, 2012 11:03:57 AM			
Last Modified	Oct 2, 2012 11:12:46 AM			
Type Modifier	[3]			
Туре	time_t			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false	,		

public serialize (pkt : packet)				
Parameters	pkt	pkt			
	Multiplicity	Unspecified			
	Author	ismael			
	Create Date Time	Sep 13, 2012 11:03:03 PM			
	Last Modified	Oct 5, 2012 1:47:35 PM			
	Туре	packet			
	Direction	inout			
Static	false				
Leaf	false				
Documentation	- Save all attributes	- Save all attributes			
Author	ismael				
Create Date Time	Sep 13, 2012 10:30:12 PM	I			
Last Modified	Oct 7, 2012 8:25:24 PM	Oct 7, 2012 8:25:24 PM			
Ordered	false				
Unique	true				
Query	false				

public unserializeTo (pkt : pad	cket, dest : serializable)			
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
	dest			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Do nothing			
Author	ismael			
Create Date Time	Sep 14, 2012 1:49:55 PM			
Last Modified	Sep 24, 2012 1:23:55 PM			
Ordered	false			

Unique	true
Query	false

Unnamed Generalization	
То	man_module_execinfo
Author	ismael
Create Date Time	Sep 17, 2012 12:23:03 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

variable

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A module variable is a variable that can be viewed (get) or modified (set) by the CMDAPI or any other module of the same waveform. This interaction is always *asynchronous* and there is no guarantee in terms of timings. An initialization value can be defined for a variable. In that case, it is specified in the .app file and sent to the Nodes during the waveform load phase. The waveform modules can restore their variables to the initialization value any time. Those variables which are not specified in the .app are not available to the manager (i.e. there is any ModuleVariable object associated to the Module object) until the module calls the SWAPI.InitVariable() function and the manager calls the moduleObj.update() or waveformObj.update() functions. It is recommended that the modules initialize their variables during INIT() and the manager calls waveformObj.update() after a successful INIT. This class is used by ALOE-Node. The CMDAPI uses the
	CmdVariable, which inherits from this class.
Author	ismael
Create Date Time	Sep 19, 2012 8:21:25 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Attributes

public id : int						
Documentation	Unique id in	Unique id in the waveform				
Author	ismael					
Create Date Time	Sep 21, 2012 1	2:12:20 AN	V I			
Last Modified	Sep 21, 2012 1	2:15:33 AN	VI			
Туре	int	int int				
Allow Empty Name	false					
Getter	false		Setter		false	
Derived	false					
Multiplicity	Unspecified					
Aggregation	None	None				
Derived Union	false	false				
Read Only	false					
Leaf	false					

public size : int					
Documentation	Size of the variable, in bytes				
Author	ismael				
Create Date Time	Sep 12, 2012	1:50:47 AM			
Last Modified	Sep 19, 2012 8	8:28:18 PM			
Туре	int				
Allow Empty Name	false				
Getter	false		Setter		false
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public name : string						
Documentation	in the .app. Need the same name	Name of the variable, as it is created by the module or defined in the .app. Note the module must create its variable with the same name as defined in the .app if wants to use the initialization value.				
Author	ismael	ismael				
Create Date Time	Sep 12, 2012 1	Sep 12, 2012 1:50:47 AM				
Last Modified	Sep 19, 2012 8	Sep 19, 2012 8:28:18 PM				
Туре	string	string				
Allow Empty Name	false	false				
Getter	false Setter false					

Derived	false
Multiplicity	Unspecified
Aggregation	None
Derived Union	false
Read Only	false
Leaf	false

private init_value : ALOEClasses.Utils.void					
Documentation	Pointer to the initialization value. In the constructor, a static buffer of variable.size bytes is allocated from the HWAPI memory pool (can use shm service) where the initialization value is stored. The value is unaltered until the destructor is called, when the memory is freed.				
Author	ismael				
Create Date Time	Sep 12, 2012 1:50:47 AM				
Last Modified	Oct 5, 2012 1:57:36 PM				
Type Modifier	*				
Туре	ALOEClasses.Utils.void				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false	-			
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public window : int						
Documentation	Number of samples to capture from the variable during variable reporting. If the variable has len bytes, window*len bytes will be captured each period timeslots.					
Author	ismael					
Create Date Time	Sep 19, 2012 5	5:49:50 PM				
Last Modified	Sep 19, 2012 8	Sep 19, 2012 8:28:18 PM				
Туре	int int					
Allow Empty Name	false					
Getter	false	Setter	false			
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public period : int						
Documentation	Period, in tir	Period, in timeslots, the variable value is reported.				
Author	ismael			,		
Create Date Time	Sep 19, 2012 5	5:49:55 PM				
Last Modified	Sep 19, 2012 8	Sep 19, 2012 8:28:18 PM				
Туре	o int	int int				
Allow Empty Name	false					
Getter	false	Sette	er	false		
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public periodCnt : int				
Author	ismael			
Create Date Time	Oct 3, 2012 1	:01:30 PM		
Last Modified	Oct 3, 2012 1	:03:08 PM		
Initial Value	0			
Туре	int	int int		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None	None		
Derived Union	false			
Read Only	false			
Leaf	false	,	· · · · · · · · · · · · · · · · · · ·	

public create (name : string, size : int)

Parameters	name	name			
	Multiplicity	Unspecified			
	Author	ismael			
	Create Date Time	Sep 14, 2012 12:39:46 AM			
	Last Modified	Sep 14, 2012 12:51:51 AM			
	Туре	string			
	Direction	inout			
	size				
	Multiplicity	Unspecified			
	Author	ismael			
	Create Date Time	Sep 19, 2012 8:25:27 PM			
	Last Modified	Sep 19, 2012 8:28:18 PM			
	Туре	o int			
	Direction	inout			
Static	false				
Leaf	false				
Documentation	Create a new variable with name "name" and "size" bytes. This function may be called by the ALOE-node or the manager.				
Author	ismael				
Create Date Time	Sep 14, 2012 12:39:33 AM				
Last Modified	Sep 19, 2012 8:28:18 PM				
Ordered	false				
Unique	true				
Query	false				

Unnamed Generalization		
То	man_variable	
Author	ismael	
Create Date Time	Sep 17, 2012 12:23:06 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	
Substitutable	false	
Visibility	Unspecified	

packet

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public

Leaf	false	
Root	false	
Documentation	This class generates and reads the contents of a control packet, managing the specific header requirements (in the future, should support different kinds of endianness). The buffer is statically allocated at object creation. Call pkt.add_data() to generate the packet before transmitting the pkt.buffer() buffer of size pkt.size(). At reception, the user must call pkt.read() before using it. The maximum control packet size is 64 Kbytes. Control packets in ALOE include a header with 4 32-bit words: 1) Packet Info 2) Destination Waveform Id 3) Destination Waveform Id 3) Destination Variable Id The first word (Packet info) contains the following information (from LSB to MSB): 1) 07 MANAGER->NODE: Magic word to check if it is a control packet. 0xAF NODE->MANAGER: 0xF0 if command successful or 0x0F if command error. 2) 815 command word (integer, up to 256 commands are supported) 3) 1631 packet size in bytes (integer, up to 65536 bytes can be transferred)	
Author	Data follows after.	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	

Attributes

public buffer : ALOEClasses.Utils.void				
Documentation	•	This is the pointer to the packet buffer. The buffer is statically allocated at object creation.		
Author	ismael	ismael		
Create Date Time	Sep 12, 2012	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 5, 2012 1:	Oct 5, 2012 1:47:35 PM		
Type Modifier	*	*		
Туре	ALOEClasses	ALOEClasses.Utils.void		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			

Multiplicity	Unspecified
Aggregation	None
Derived Union	false
Read Only	false
Leaf	false

public buffer_sz : int				
Documentation	Size of the packet buffer			
Author	ismael			
Create Date Time	Sep 12, 2012 1	1:50:47 AM		
Last Modified	Sep 19, 2012 7	7:45:57 PM		
Initial Value	0			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified	Unspecified		
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public w_ptr : int			
Documentation	Packet write pointer		
Author	ismael		
Create Date Time	Sep 19, 2012 7:43:35 PM		
Last Modified	Oct 5, 2012 1:57:36 PM		
Initial Value	0		
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		_

public r_ptr : int	
Documentation	Packet read pointer
Author	ismael
Create Date Time	Sep 19, 2012 7:44:50 PM

Last Modified	Oct 5, 2012 1:57:36 PM			
Initial Value	0			
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			·

<u>-</u>	
public clear ()	
Static	false
Leaf	false
Documentation	Clears the packet contents and its header (including command type)
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Sep 19, 2012 7:45:57 PM
Ordered	false
Unique	true
Query	false

public read ()	
Static	false
Leaf	false
Documentation	Reads the packet header. This function must be called at reception before calling get_cmd() or get_data().
Author	ismael
Create Date Time	Sep 19, 2012 7:53:48 PM
Last Modified	Sep 19, 2012 7:55:58 PM
Ordered	false
Unique	true
Query	false

public buffer () : void	
Static	false
Leaf	false
	Returns a pointer to the packet buffer (for transmission and reception through the interface functions)

Author	ismael
Create Date Time	Sep 19, 2012 7:45:43 PM
Last Modified	Sep 19, 2012 7:55:58 PM
Type Modifier	*
Ordered	false
Unique	true
Query	false

public set_cmd (cmd : Command)		
Parameters	cmd	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 13, 2012 10:59:26 PM
	Туре	Command
	Direction	inout
Static	false	
Leaf	false	
Documentation	Defines the command field on the packet header.	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Sep 19, 2012 7:35:57 PM	
Ordered	false	
Unique	true	
Query	false	

public get_cmd () : Command	
Static	false
Leaf	false
Documentation	returns the command field from the packet header.
Author	ismael
Create Date Time	Sep 13, 2012 8:56:26 PM
Last Modified	Sep 19, 2012 7:45:57 PM
Ordered	false
Unique	true
Query	false

public add_data (data : void*, len : int) : int

Parameters	data	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 12, 2012 2:06:51 AM
	Туре	■ void*
	Direction	inout
	len	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 19, 2012 7:55:58 PM
	Туре	int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Appends "len" bytes from "data" pointer to the end of the packet unless there is not enough space in the packet. Returns the number of bytes that where successfully appended.	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Sep 19, 2012 7:55:58 PM	
Ordered	false	
Unique	true	
Query	false	

public get_data (buffer : void, len : int) : int

Parameters	buffer	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 19, 2012 7:55:59 PM
	Last Modified	Sep 19, 2012 7:57:44 PM
	Type Modifier	*
	Туре	o void
	Direction	inout
	len	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 19, 2012 7:55:12 PM
	Last Modified	Sep 19, 2012 7:55:58 PM
	Туре	o int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Copies "len" bytes of the packet data to the buffer pointed by "buffer" unless the packet has no more data to read. Returns the number of bytes that where successfully copied.	
Author	ismael	
Create Date Time	Sep 19, 2012 7:54:59 PM	
Last Modified	Sep 19, 2012 7:57:44 PM	
Ordered	false	
Unique	true	
Query	false	

public max_size () : int	
Static	false
Leaf	false
Documentation	Returns the maximum size of the packet (in bytes)
Author	ismael
Create Date Time	Sep 13, 2012 8:57:08 PM
Last Modified	Sep 19, 2012 7:55:58 PM
Ordered	false
Unique	true
Query	false

public size () : int	
Static	false
Leaf	false

Documentation	Returns the current size of the packet (in bytes)
Author	ismael
Create Date Time	Sep 14, 2012 12:40:56 AM
Last Modified	Sep 19, 2012 7:55:58 PM
Ordered	false
Unique	true
Query	false

public set_ack (ack : boolean)		
Parameters	ack	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 19, 2012 8:59:34 PM
	Last Modified	Sep 19, 2012 9:01:21 PM
	Туре	boolean
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 19, 2012 8:59:20 PM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public get_ack () : boolean		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 19, 2012 8:59:34 PM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public set_dest (waveform_id : int, module_id : int, variable_id : int)

Parameters	waveform_id	waveform_id	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 12:59:49 PM	
	Last Modified	Oct 5, 2012 6:17:55 PM	
	Туре	int int	
	Direction	inout	
	module_id		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 12:59:49 PM	
	Last Modified	Oct 5, 2012 6:17:55 PM	
	Туре	int int	
	Direction	inout	
	variable_id		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 12:59:49 PM	
	Last Modified	Oct 5, 2012 6:17:55 PM	
	Туре	int int	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 24, 2012 12:59:28 PM		
Last Modified	Oct 5, 2012 6:17:55 PM		
Ordered	false		
Unique	true		
Query	false		

public get_dest (waveform_id : int, module_id : int, variable_id : int)

Parameters	waveform_id		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 1:00:12 PM	
	Last Modified	Oct 5, 2012 6:17:55 PM	
	Type Modifier	&	
	Туре	o int	
	Direction	inout	
	module_id		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 1:00:12 PM	
	Last Modified	Oct 5, 2012 6:17:55 PM	
	Type Modifier	&	
	Туре	o int	
	Direction	inout	
	variable_id		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 1:00:12 PM	
	Last Modified	Oct 5, 2012 6:17:55 PM	
	Type Modifier	&	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 24, 2012 12:59:59 PM		
Last Modified	Oct 5, 2012 6:17:55 PM		
Ordered	false		
Unique	true		
Query	false		

public get_header () : int	
Static	false
Leaf	false
Documentation	returns the first 32-bit word of the packet
Author	ismael
Create Date Time	Oct 4, 2012 10:14:23 AM
Last Modified	Oct 5, 2012 1:47:35 PM

Ordered	false
Unique	true
Query	false

Unnamed Association			
From	Name	Value	
	End Model Element	platform	
	Author	ismael	
	Create Date Time	Sep 12, 2012 2:05:33 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	Aggregation	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false	false	
Leaf	false	false	
Visibility	Unspecified	Unspecified	
Author	ismael	ismael	
Create Date Time	Sep 12, 2012 2:05:33 AM		
Last Modified	Oct 6, 2012 12:14:27 PM	Oct 6, 2012 12:14:27 PM	
Derived	false		

man_variable

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Inherits from General.ModVariable. Part of the CMDAPI. Adds functionality to set or obtain variable values from the distributed modules.
Author	ismael
Create Date Time	Sep 17, 2012 12:22:42 AM
Last Modified	Oct 7, 2012 8:25:24 PM

Attributes

public cur_value : void			
Author	ismael		
Create Date Time	Sep 19, 2012 8:54:25 PM		
Last Modified	Oct 5, 2012 1:57:36 PM		
Type Modifier	*		
Туре	o void		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Operations

public value_set (value : ALOEClasses.Utils.void, size : int)

Parameters	value	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 17, 2012 12:52:08 AM
	Type Modifier	*
	Туре	ALOEClasses.Utils.void
	Direction	inout
	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 17, 2012 5:48:10 PM
	Туре	int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Sets the variable of the module running in an ALOE- node to the value pointed by the buffer "value". Only min("size",variable.size) bytes will be updated. 1) Verify module.waveform.Status=RUN 2) Copy min("size",variable.size) bytes from "value" to curValue 3) Send Cmd.SET dest(variable.module.waveform.Id, variable.module.Id, variable.Id) to variable.module.node using variable.module.waveform.cmdPlatform and serialize(variable) 4) wait for answer. 5) update lastUpdateTS with current ts	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 5, 2012 1:57:36 PM	
Ordered	false	
Unique	true	
Query	false	

public value_get (value : ALOEClasses.Utils.void, size : int)

Parameters	value	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 17, 2012 12:52:08 AM
	Type Modifier	*
	Туре	ALOEClasses.Utils.void
	Direction	inout
	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 17, 2012 5:48:10 PM
	Туре	int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Gets the variable of the module running in an ALOE- node and saves the value to the buffer "value". Only min("size",variable.size) bytes will be updated. 1) Verify module.waveform.Status=RUN 2) Send Cmd.GET dest(variable.module.waveform.ld, variable.module.ld, variable.ld) to variable.module.node using variable.module.waveform.cmdPlatform 3) wait for answer and serializeTo(variable) the packet 4) update lastUpdateTS with current ts	
Author	ismael	
	Sep 12, 2012 1:50:47 AM	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Create Date Time Last Modified	Oct 5, 2012 1:57:36 PM	
Last Modified	Oct 5, 2012 1:57:36 PM	

public report_start (callback : fncPtr, period : int, window : int)

Parameters	callback			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 18, 2012 11:14:49 AM		
	Last Modified	Sep 18, 2012 11:20:37 AM		
	Type Modifier	*		
	Туре	fncPtr		
	Direction	inout		
	period			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 18, 2012 10:48:04 AM		
	Last Modified	Sep 18, 2012 10:55:41 AM		
	Type	-		
	Direction	inout		
	window	window		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 18, 2012 10:48:04 AM		
	Last Modified	Sep 18, 2012 10:55:41 AM		
	Туре	int int		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Begins a continuous report of a variable value with a given period and window. Each timeslot, the module produces a new variable value, which is received by the manager who calls the function pointed by "fncPtr". 1) Verify module.waveform.Status.isRunning() 2) Use module.node.probeListener.addCallback(fncPtr, variable.ld) to setup a callback handler to the Probe physical interface. 3) save window and period attributes. Save size to temporal variable. Set size to 0. 4) Send Cmd.SET dest(variable.module.waveform.ld, variable.module.ld, variable.ld) to module.node using module.waveform.cmdPlatform and serialize(variable) 5) Restore size from temporal variable. 6) Waits for ACK. If OK quits otherwise removes the callback using module.node.probeListener.removeCallback(variable.ld)			
Author	ismael			
Create Date Time	Sep 18, 2012 10:47:48 AM			
Last Modified	Oct 5, 2012 1:57:36 PM			

Ordered	false
Unique	true
Query	false

public report_stop ()	
Static	false
Leaf	false
Documentation	Stops reporting a variable. Sets window=period=0 and serializes de variable using SET command. The variable then not generate any other packet. This function then removes the callback from module.node.probeListener
Author	ismael
Create Date Time	Sep 18, 2012 10:48:18 AM
Last Modified	Oct 5, 2012 1:57:36 PM
Ordered	false
Unique	true
Query	false

public serialize (pkt : packet)		
Parameters	pkt	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 13, 2012 11:03:03 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	packet
	Direction	inout
Static	false	
Leaf	false	
Documentation	Serialize all attributes including value if size>0	
Author	ismael	
Create Date Time	Sep 13, 2012 10:30:12 PM	
Last Modified	Oct 7, 2012 8:25:24 PM	
Ordered	false	
Unique	true	
Query	false	

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 1:50:19 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	packet
	Direction	inout
	dest	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 1:50:19 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	serializable
	Direction	inout
Static	false	
Leaf	false	
Documentation	Save all attributes (including curValue if size>0) except initValue	
Author	ismael	
Create Date Time	Sep 14, 2012 1:49:55 PM	
Last Modified	Sep 24, 2012 1:40:42 PM	
Ordered	false	
Unique	true	
Query	false	

Unnamed Generalization	
From	ariable variable
Author	ismael
Create Date Time	Sep 17, 2012 12:23:06 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

mapping

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public

Leaf	false
Root	false
Documentation	This class runs the waveform-to-platform mapping algorithm and stores the result. The mapping procedure is as follows: 1) Create an object instance 2) call to setup() to configure the mapping algorithm 3) call to map(platform,waveform) to map "waveform" object to "platform" object 4) +result is an array of nof_nodes waveforms, one for each waveform. 5) The processorId attribute of every module is filled during map() with the processor id in the node it has been mapped to
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 6, 2012 12:14:27 PM

Attributes

public cost : float			
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Sep 17, 2012 5:48:10 PM		
Туре	float		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public setup (algorithm	: int, options : int) : mapping		
Parameters	algorithm	algorithm	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Last Modified	Sep 17, 2012 5:48:10 PM	
	Туре	int	
	Direction	inout	
	options		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Last Modified	Sep 17, 2012 5:48:10 PM	
	Туре	int	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Author	ismael	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 5, 2012 1:18:14 PM	Oct 5, 2012 1:18:14 PM	
Ordered	false	false	
Unique	true		
Query	false		

public map (platform : platform, waveform : waveform)		
Parameters	platform	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 18, 2012 11:05:42 AM
	Туре	platform
	Direction	inout
	waveform	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 17, 2012 12:08:18 AM
	Туре	waveform
	Direction	inout

Static	false
Leaf	false
Documentation	1) Configure the mapping algorithm 2) generate the c,b waveform model 3) call the mapping algorithm with the platform and waveform modules 4) for each module, assign its node. 5) for all modules's interfaces, assign physical interfaces id (if communication is external) 6) construct the result[] array of waveform objects
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 2, 2012 12:41:11 PM
Ordered	false
Unique	true
Query	false

Unnamed Association			
To (processors)	Name	Value	
	End Model Element	processor	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	processor_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false	false	
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 7, 2012 9:40:24 PM		
Derived	false		

Unnamed Association				
To (result)	Name	Value		
	End Model Element	man_waveform		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	node_MAX		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false	false		
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:40:24 PM	Oct 7, 2012 9:40:24 PM		
Derived	false	false		

man_module_execinfo

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Inherits from General.ModExecInfo class. Part of the CMDAPI, adds functionality to retrieve module's ExecInfo attributes
Author	ismael
Create Date Time	Sep 17, 2012 12:21:43 AM
Last Modified	Oct 6, 2012 12:14:27 PM

Attributes

public lastUpdateTS : int				
Author	ismael			
Create Date Time	Sep 14, 2012 2:4	12:10 PM		
Last Modified	Sep 17, 2012 12	:25:09 AM		
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false	_		
Leaf	false			

public update ()	
Static	false
Leaf	false
Documentation	Updates the local object's attributes with the node's attributes. 1) Verify mmodule.waveform.Status.isLoaded() 2) Send Cmd.GET dest(module.waveform.ld, module.ld,0) to module.node using module.waveform.cmdPlatform 3) wait for answer and serializeTo(module.execInfo) 4) update lastUpdateTS with current ts
Author	ismael
Create Date Time	Sep 17, 2012 12:21:53 AM
Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

public serialize (pkt : packet)		
Parameters	pkt	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 13, 2012 10:30:12 PM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	□ packet
	Direction	inout
Static	false	
Leaf	false	

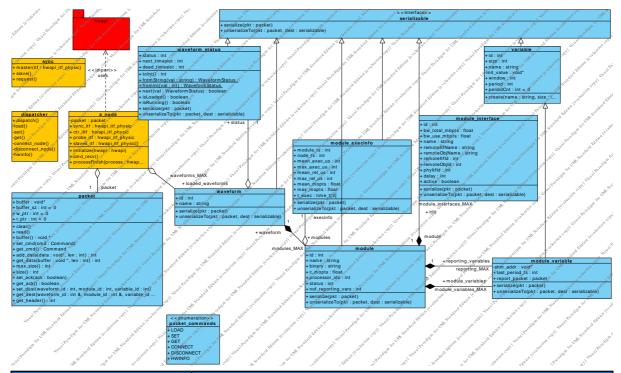
Documentation	Do nothing
Author	ismael
Create Date Time	Sep 13, 2012 10:29:07 PM
Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

public unserializeTo (pkt : packet, dest : serializable)			
Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Type	acket packet	
	Direction	inout	
	dest		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	serializable	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Save all attributes		
Author	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PM		
Last Modified	Sep 19, 2012 8:57:55 PM		
Ordered	false		
Unique	true		
Query	false		

Unnamed Generalization	
From	module_execinfo
Author	ismael
Create Date Time	Sep 17, 2012 12:23:03 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Class Diagram

a_node



Name	Value
Name	a_node
Author	ismael
Create Date Time	Oct 5, 2012 3:28:13 PM
Last Modified	Oct 7, 2012 9:07:30 PM

Summary

Name	Documentation
i hwapi	
serializable	
waveform_status	
variable	A module variable is a variable that can be viewed (get) or modified (set) by the CMDAPI or any other module of the same waveform. This interaction is always *asynchronous* and there is no guarantee in terms of timings. An initialization value can be defined for a variable. In that case, it is specified in the .app file and sent to the Nodes during the waveform
	load phase. The waveform modules can restore their variables to the initialization value any time.
	Those variables which are not specified in the .app are not available to the manager (i.e. there is any ModuleVariable object associated to the Module object) until the module calls the SWAPI.InitVariable() function

	and the manager calls the moduleObj.update() or waveformObj.update() functions. It is recommended that the modules initialize their variables during INIT() and the manager calls waveformObj.update() after a successful INIT. This class is used by ALOE-Node. The CMDAPI uses the CmdVariable, which inherits from this class.
E CV/DO	which innertis from this class.
sync dispatcher	
a_node	
<u> </u>	This is the class that processes the commands coming from the ALOE-Manager.
	The HWAPI runs a background process and creates an object of this class. The HWAPI is responsible to periodically check for incoming messages from the control interface and call the process_cmd() function
module_interface	Data interface between modules.
module_execinfo	The class attributes save information relative to the execution of the module.
waveform	Used by the node to save the loaded waveforms, its modules and variables. At LOAD command, the class is received and serializedTo() a free Waveform object instance. Then waveform attributes, modules and variables and all their attributes are created on pre-allocated objects instances.
packet	This class generates and reads the contents of a control packet, managing the specific header requirements (in the future, should support different kinds of endianness). The buffer is statically allocated at object creation. Call pkt.add_data() to generate the packet before transmitting the pkt.buffer() buffer of size pkt.size(). At reception, the user must call pkt.read() before using it.
	The maximum control packet size is 64 Kbytes. Control packets in ALOE include a header with 4 32-bit words:
	1) Packet Info 2) Destination Waveform Id 3) Destination Module Id 4) Destination Variable Id
	The first word (Packet info) contains the following information (from LSB to MSB):
	1) 07 MANAGER->NODE: Magic word to check if it is a control packet. 0xAF NODE->MANAGER: 0xF0 if command successful or 0x0F if command error. 2) 815 command word (integer, up to 256 commands are supported) 3) 1631 packet size in bytes (integer, up to 65536 bytes can be transferred)

	Data follows after.
module	Stores the attributes of waveform module.
	Class Inherited from the Variable class. This is used by the ALOE-Node only
packet_commands	Command type constants

Details

hwapi

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 17, 2012 5:46:05 PM
Last Modified	Oct 5, 2012 3:38:03 PM
Visibility	public

Children

Name	Documentation
hwapi	The Base HWAPI class abstracts the platform (OS) and hardware particularities, for instance: timers, shared memory, physical interfaces and process creation/scheduling.
	Only one instance of this class can be created on each node. This is created by the kernel-thread class at boot of every node or by the Manager process. The hwapi is in charge of controlling thread-local-storage. Therefore, there is no need to pass a pointer to the hwapi context to each function call. In linux, can be implemented using POSIX TLS orthread GCC. However, this is not strictly required since only one execution thread access thread-sensible functions at a time.
machine	Public structure configured at initialize() from the information read from platform.conf. Stores some properties of the local machine architecture.
hwapi_kernel	The HWAPI kernel schedules the execution of the ALOE-Node class and waveform modules in each platform's node. The main() is implemented in this class. When it starts, it creates the HWAPI-base class (which instantiates the rest of hwapi classes) and the ALOE-Node class (which processes commands from the manager). It initializes hardware devices and runs the main kernel timer.

	The execution timer, in Linux, can be driven from three different sources, chosen from the platform.conf file: 1) POSIX real-time timer 2) Synchronization packet, through a POSIX semaphore 3) Digital converter, through a POSIX semaphore
hwapi_process	A HWAPI Process is defined as dynamically loaded shared library with two symbols that *MUST* be defined:startup(arg0,arg1): This function is called at load-time and is not subject to real-time constraintsrunCycle(): This function is called each time-slot and is subject to real-time constraints. It is used to load and execute signal processing waveform modules. The HWAPI.Process objects are instantiated by Base.initializeNode() function at boot. A call to create() loads the module into memory. A call to startup() calls the _startup() function and a call to places the _runCycle() function into the pipelined execution queue (see Proc-Thread class)
hwapi_periodic	
hwapi_pipeline	A ProcThread is a POSIX-thread that runs in a single processor core with real-time priority and FIFO-scheduling (non-preemptable). It has a queue of function pointers which are called one after another. This functions are supposed to run SP tasks. The thread is synchronized with the kernel-thread with a shared memory POSIX semaphore. At the beginning of the timeslot, the kernel-thread actives a semaphore indicating the Proc-Thread may start its execution. After all functions are called, the Proc-Thread blocks on the semaphore again. These threads are detachable.
dac	
hwapi_process_errors	
itf	

uses : Import	
From	a_node
Visibility	Unspecified
Stereotypes	import
Author	ismael
Create Date Time	Oct 5, 2012 3:30:12 PM
Last Modified	Oct 5, 2012 3:38:03 PM

serializable

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	Interface
Author	ismael
Create Date Time	Sep 13, 2012 9:53:42 PM
Last Modified	Oct 7, 2012 8:25:24 PM

Operations —			
public serialize (pkt : pa	public serialize (pkt : packet)		
Parameters	pkt	pkt	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 13, 2012 11:03:03 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	packet	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 13, 2012 10:30:12 F	Sep 13, 2012 10:30:12 PM	
Last Modified	Oct 7, 2012 8:25:24 PM		
Ordered	false		
Unique	true		
Query	false		

public unserializeTo (pkt : packet, dest : serializable)				
Parameters	pkt	pkt		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
	dest			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false			
Leaf	false	false		
Documentation				
Author	ismael	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PM	Sep 14, 2012 1:49:55 PM		
Last Modified	Sep 20, 2012 10:40:46 A	Sep 20, 2012 10:40:46 AM		
Ordered	false			
Unique	true			
Query	false			

Unnamed Generalization	
То	module_execinfo
Author	ismael
Create Date Time	Sep 16, 2012 11:37:11 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
То	module
Author	ismael
Create Date Time	Sep 16, 2012 11:37:14 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
То	waveform
Author	ismael
Create Date Time	Sep 13, 2012 10:03:13 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
То	module_interface
Author	ismael
Create Date Time	Sep 17, 2012 8:39:17 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
То	■ variable
Author	ismael
Create Date Time	Sep 13, 2012 10:03:56 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	ı
То	waveform_status
Author	ismael
Create Date Time	Sep 21, 2012 12:23:19 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

waveform_status

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 21, 2012 12:22:45 AM
Last Modified	Oct 7, 2012 9:07:22 PM

Attributes

public status : int			
Author	ismael		
Create Date Time	Sep 21, 2012 12:	23:29 AM	
Last Modified	Sep 21, 2012 12:	28:50 AM	
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public next_timeslot : int			
Author	ismael		
Create Date Time	Sep 24, 2012 12:20:19 PM	M	
Last Modified	Sep 24, 2012 12:21:27 PM	M	
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Documentation	Indicates the deadline timeslot to check if the status has been changed correctly.		
Author	ismael		
Create Date Time	Oct 2, 2012 11:5	57:19 AM	
Last Modified	Oct 2, 2012 12:0	Oct 2, 2012 12:02:48 PM	
Туре	o int	int int	
Allow Empty Name	false	·	
Getter	false	Setter	false
Derived	false	false	
Multiplicity	Unspecified	Unspecified	
Aggregation	None	None	
Derived Union	false	false	
Read Only	false	false	
Leaf	false		

public tolnt () : int	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 14, 2012 11:37:40 AM
Last Modified	Sep 21, 2012 12:28:50 AM
Ordered	false
Unique	true
Query	false

public fromString (val : string) : WaveformStatus		
Parameters	val	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:38:17 AM
	Last Modified	Sep 21, 2012 12:28:50 AM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 14, 2012 11:37:50 AM	
Last Modified	Sep 24, 2012 1:51:36 PM	
Ordered	false	
Unique	false	
Query	false	

public fromInt (val : int) : WaveformStatus		
Parameters	val	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:38:11 AM
	Last Modified	Sep 21, 2012 12:28:50 AM
	Туре	int int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 14, 2012 11:38:00 AM	
Last Modified	Sep 24, 2012 1:51:36 PM	
Ordered	false	
Unique	false	
Query	false	

public next (val : WaveformStatus) : boolean		
Parameters	val	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 1:19:33 PM
	Last Modified	Sep 21, 2012 12:28:50 AM
	Туре	WaveformStatus
	Direction	inout
Static	false	
Leaf	false	
Documentation	Changes the waveform status if the status transition is allowed. Otherwise does nothing and returns false	
Author	ismael	
Create Date Time	Sep 14, 2012 1:19:15 PM	
Last Modified	Sep 21, 2012 12:28:50 AM	
Ordered	false	
Unique	true	
Query	false	

public isLoaded () : boolean		
Static	false	
Leaf	false	
Documentation	returns true if the Status is LOADED, INIT, RUN or PAUSE	
Author	ismael	
Create Date Time	Sep 18, 2012 2:05:00 PM	

Last Modified	Sep 21, 2012 12:28:50 AM
Ordered	false
Unique	true
Query	false

public isRunning () : boolean	
Static	false
Leaf	false
Documentation	returns true if the waveform is in status RUN or PAUSE
Author	ismael
Create Date Time	Sep 18, 2012 2:24:23 PM
Last Modified	Sep 21, 2012 12:28:50 AM
Ordered	false
Unique	true
Query	false

public serialize (pkt : packet)				
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	acket packet		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Save +status and +next_timeslot			
Author	ismael			
Create Date Time	Sep 13, 2012 10:30:12 PM			
Last Modified	Oct 7, 2012 8:25:24 PM			
Ordered	false			
Unique	true			
Query	false			

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	packet	
	Direction	inout	
	dest		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	serializable	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	This function is called when a new status change has been indicated. This unserialize function is a bit more complex, since it must ensure that the status has been changed successfully. 1) Save status, next_tstamp and dead_tstamp 2) call hwapi.sleepToTstamp(dead_tstamp) to sleep until dead_tstamp 3) when back, return OK if all modules have the correct status. Return ERR otherwise		
Author	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PM		
Last Modified	Oct 2, 2012 12:02:48 PM		
Ordered	false		
Unique	true		
Query	false		

Unnamed Generalization	
From	serializable
Author	ismael
Create Date Time	Sep 21, 2012 12:23:19 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Association					
From	Name	Value			
	End Model Element	waveform			
	Author	ismael			
	Create Date Time	Oct 7, 2012 9:00:56 PM			
	Provide Property Getter Method	false			
	Provide Property Setter Method	false			
	Multiplicity	Unspecified			
	Visibility	Unspecified			
	Aggregation Kind	Aggregation			
	Navigable	true			
	Derived	false			
	Derived Union	false			
	Read Only	false			
	Static	false			
	Leaf	false			
Abstract	false				
Leaf	false	false			
Visibility	Unspecified	Unspecified			
Author	ismael	ismael			
Create Date Time	Oct 7, 2012 9:00:56 PM	Oct 7, 2012 9:00:56 PM			
Last Modified	Oct 7, 2012 9:07:22 PM	Oct 7, 2012 9:07:22 PM			
Derived	false	false			

variable

Name	Value	
Active	false	
Business Key Mutable	true	
Business Model	false	
Visibility	public	
Leaf	false	
Root	false	
Documentation	A module variable is a variable that can be viewed (get) or modified (set) by the CMDAPI or any other module of the same waveform. This interaction is always *asynchronous* and there is no guarantee in terms of timings.	
	An initialization value can be defined for a variable. In that case, it is specified in the .app file and sent to the Nodes during the waveform load phase. The waveform modules can restore their variables to the initialization value any time.	

	Those variables which are not specified in the .app are not available to the manager (i.e. there is any ModuleVariable object associated to the Module object) until the module calls the SWAPI.InitVariable() function and the manager calls the moduleObj.update() or waveformObj.update() functions. It is recommended that the modules initialize their variables during INIT() and the manager calls waveformObj.update() after a successful INIT. This class is used by ALOE-Node. The CMDAPI uses the CmdVariable, which inherits from this class.
Author	ismael
Create Date Time	Sep 19, 2012 8:21:25 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Attributes

public id : int					
Documentation	Unique id ir	Unique id in the waveform			
Author	ismael				
Create Date Time	Sep 21, 2012	12:12:20 AM			
Last Modified	Sep 21, 2012	12:15:33 AM			
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false	false			
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false	false			
Read Only	false	false			
Leaf	false				

public size : int					
Documentation	Size of the variable,	Size of the variable, in bytes			
Author	ismael				
Create Date Time	Sep 12, 2012 1:50:47 A	M			
Last Modified	Sep 19, 2012 8:28:18 P	M			
Туре	int	int			
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				

Read Only	false
Leaf	false

public name : string				
Documentation	Name of the variable, as it is created by the module or defined in the .app. Note the module must create its variable with the same name as defined in the .app if wants to use the initialization value.			
Author	ismael			
Create Date Time	Sep 12, 2012 1:5	60:47 AM		
Last Modified	Sep 19, 2012 8:28:18 PM			
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	Э
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

private init_value : ALOEClasses.Utils.void				
Documentation	Pointer to the initialization value. In the constructor, a static buffer of variable.size bytes is allocated from the HWAPI memory pool (can use shm service) where the initialization value is stored. The value is unaltered until the destructor is called, when the memory is freed.			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 5, 2012 1:57:36 PM			
Type Modifier	*			
Туре	ALOEClasses.Utils.void			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public window : int

Documentation	Number of samples to capture from the variable during variable reporting. If the variable has len bytes, window*len bytes will be captured each period timeslots.		
Author	ismael		
Create Date Time	Sep 19, 2012 5:49:50 PM		
Last Modified	Sep 19, 2012 8:28:18 PM		
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public period : int			
Documentation	Period, in timeslots, the variable value is reported.		
Author	ismael		
Create Date Time	Sep 19, 2012 5:49:55 PM		
Last Modified	Sep 19, 2012 8:28:18 PM		
Туре	o int		
Allow Empty Name	false	false	
Getter	false	false Setter false	
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public periodCnt : int				
Author	ismael			
Create Date Time	Oct 3, 2012 1	:01:30 PM		
Last Modified	Oct 3, 2012 1	:03:08 PM		
Initial Value	0			
Туре	int int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			·

public create (name : string, size : int)		
Parameters	name	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 12:39:46 AM
	Last Modified	Sep 14, 2012 12:51:51 AM
	Туре	string
	Direction	inout
	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 19, 2012 8:25:27 PM
	Last Modified	Sep 19, 2012 8:28:18 PM
	Туре	o int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Create a new variable with name "name" and "size" bytes. This function may be called by the ALOE-node or the manager.	
Author	ismael	
Create Date Time	Sep 14, 2012 12:39:33 AM	
Last Modified	Sep 19, 2012 8:28:18 PM	
Ordered	false	
Unique	true	
Query	false	

Unnamed Generalization	
То	module_variable
Author	ismael
Create Date Time	Sep 19, 2012 8:22:35 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
From	serializable
Author	ismael
Create Date Time	Sep 13, 2012 10:03:56 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

sync

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 1:51:05 PM
Last Modified	Oct 6, 2012 12:14:27 PM

public master (itf : hwapi_itf_physic)			
Parameters	itf	itf	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 27, 2012 2:55:30 PM	
	Last Modified	Oct 5, 2012 2:20:03 PM	
	Туре	hwapi_itf_physic	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 18, 2012 10:13:07 A	M	
Last Modified	Oct 5, 2012 2:11:57 PM		
Ordered	false	false	
Unique	true	true	
Query	false		

public slave ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 18, 2012 10:15:45 AM
Last Modified	Oct 5, 2012 2:11:57 PM
Ordered	false
Unique	true
Query	false

public request ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 27, 2012 2:36:44 PM
Last Modified	Oct 5, 2012 2:11:57 PM
Ordered	false
Unique	true
Query	false

dispatcher

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 1:51:35 PM
Last Modified	Oct 6, 2012 12:14:27 PM

public dispatch ()	
Static	false
Leaf	false
Documentation	Checks the packet command and calls a method to process it
Author	ismael
Create Date Time	Sep 13, 2012 8:40:32 PM
Last Modified	Oct 5, 2012 1:57:36 PM
Ordered	false
Unique	true
Query	false

private load ()	
Static	false
Leaf	false
Documentation	The process creation is slightly complex in order to correctly isolate the hwapi from the swapi and node functionality. Therefore, the hwapi.Process class has no information on what a pid or a Node/Module class is, and what are they used for. Conversely, the Process.startup() call accepts a pointer argument which are passed to the swapi, who does know what to do with it (actually, it is a pointer to the module object). 1) Find in +loaded_waveforms the first object with Status=STOP
	2) unserializeTo() this object 3) for each module in the waveform, find an empty Process object in hwapi.procs array 3.a) Set binaryPath, execPosition, processorIdx and Module in Process attributes 3.b) Set finishCallback function pointer to processError 3.c) Save Process pointer to moduleObj.process

	 3.d) call to moduleObj.pid=hwapi.procs[i].create() method 3.e) call hwapi.procs[i].startPoint(myModuleObj,probeltf); Check for error in returned value. 4) Set the waveform status to LOADED 5) send ACK ok
Author	ismael
Create Date Time	Sep 13, 2012 9:02:32 PM
Last Modified	Oct 5, 2012 1:57:36 PM
Ordered	false
Unique	true
Query	false

private set ()	
Static	false
Leaf	false
Documentation	1) Use processing_packet.getDest() to get the destination object 2) Find waveformId 3) If moduleId=0, unserializeTo(waveform.status) and return OK 4) Find moduleId 5) If variableId=0 do nothing (nothing implemented) return ERR 6) Find variableId, unserializeTo(waveform.module.variable) and return OK If at any stage, the Id is not found, return ERR
Author	ismael
Create Date Time	Sep 18, 2012 9:56:48 AM
Last Modified	Oct 5, 2012 1:57:36 PM
Ordered	false
Unique	true
Query	false

private get ()	
Static	false
Leaf	false
Documentation	1) Use processing_packet.getDest() to get the destination object 2) If waveformId=0, serialize() node and return OK 3) Find waveformId 4) If moduleId=0, serialize() waveform and return OK 5) Find moduleId 6) If variableId=0 serialize() waveform.module.execInfo and return OK 7) Find variableId, serialize() waveform.module.variable and return OK

	If at any stage, the Id is not found, return ERR		
Author	ismael		
Create Date Time	Sep 17, 2012 12:32:12 AM		
Last Modified	Oct 5, 2012 1:57:36 PM		
Ordered	false		
Unique	true		
Query	false		

private connect_node ()	
Static	false
Leaf	false
Documentation	1) Connect all output data interfaces
Author	ismael
Create Date Time	Sep 26, 2012 10:41:46 AM
Last Modified	Oct 5, 2012 3:27:28 PM
Ordered	false
Unique	true
Query	false

private disconnect_node ()		
Static	false	
Leaf	false	
Documentation	1) Disconnect all output interfaces	
Author	ismael	
Create Date Time	Sep 26, 2012 10:41:51 AM	
Last Modified	Oct 5, 2012 3:27:28 PM	
Ordered	false	
Unique	true	
Query	false	

private hwinfo ()	
Static	false
Leaf	false
Documentation	Copies the contents of the hwapi.machine structure to the packet
Author	ismael
Create Date Time	Oct 5, 2012 3:26:52 PM
Last Modified	Oct 5, 2012 3:56:29 PM
Ordered	false
Unique	true
Query	false

a_node

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	This is the class that processes the commands coming from the ALOE-Manager. The HWAPI runs a background process and creates an object of this class. The HWAPI is responsible to periodically check for incoming messages from the control interface and call the
	process_cmd() function
Author	ismael
Create Date Time	Sep 13, 2012 5:15:34 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Attributes

private packet : packet				
Author	ismael			
Create Date Time	Sep 17, 2012 12:31:45 AM	М		
Last Modified	Oct 5, 2012 1:47:35 PM			
Туре	packet			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public sync_itf : hwapi_itf_physic				
Author	ismael			
Create Date Time	Sep 25, 2012 11:43:39 AM			
Last Modified	Oct 5, 2012 2:20:03 PM			
Туре	hwapi_itf_physic			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public ctr_iltf : hwapi_itf_physic				
Author	ismael			
Create Date Time	Sep 25, 2012 11:43:53 AM			
Last Modified	Oct 5, 2012 2:20:03 PM			
Туре	hwapi_itf_physic			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public probe_itf : hwapi_itf_physic			
Author	ismael	-	
Create Date Time	Sep 27, 2012 2:30:56 PM	1	
Last Modified	Oct 5, 2012 3:56:29 PM		
Туре	hwapi_itf_physic		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public slaves_itf : hwapi_itf_physic				
Author	ismael	ismael		
Create Date Time	Sep 27, 2012	2:31:02 PM		
Last Modified	Oct 5, 2012 2:	20:03 PM		
Type Modifier	0			
Туре	hwapi_itf_p	physic	,	
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public initialize (hwapi : h	wapi)			
Parameters	hwapi	hwapi		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 1, 2012 7:29:04 PM		
	Last Modified	Oct 1, 2012 7:29:39 PM		
	Туре	a hwapi		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	(with max_modules_modules and variables and variables) +loaded_waveforms slave 2) Find physical interprobeltf 4) If !hwapi.machine 4.1) find physical interprobeltf 4.2) syncltf.setCal 4.3) if !hwapi.mach SyncRequest() to the 5) If hwapi.machine. 5.1) find all physice "slavesync*" and save	false 1) Pre-allocates max_waveforms objects of type Waveform (with max_modules_x_waveform and max_variables_x_module modules and variables object instances) in the +loaded_waveforms array and initialize synchronization master/ slave 2) Find physical interface with name "ctrl" and save to ctrlltf 3) Find physical interface with name "probe" and save to probeltf 4) If !hwapi.machine.syncMaster, 4.1) find physical interface with name "sync" and save pointer		

	5.3) if !hwapi.machine.isContinuous slaveItf[i].setCallback(SyncMaster,kernelPrio) for each slaveItf
Author	ismael
Create Date Time	Sep 16, 2012 11:48:38 PM
Last Modified	Oct 4, 2012 10:33:19 AM
Ordered	false
Unique	true
Query	false

public cmd_recv ()	
Static	false
Leaf	false
Documentation	This is a thread created by the hwapi kernel thread with normal priority. Reads commands from ctrl interface and processes them.
Author	ismael
Create Date Time	Oct 2, 2012 11:39:26 AM
Last Modified	Oct 5, 2012 1:57:36 PM
Ordered	false
Unique	true
Query	false

public processFinish (process : hwapi_process)		
Parameters	process	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 4, 2012 1:34:07 AM
	Last Modified	Oct 4, 2012 1:36:10 AM
	Туре	hwapi_process
	Direction	inout
Static	false	
Leaf	false	
Documentation	This function is called by a Process object when his module finishes the execution. If process.finishCode!=ProcessErrorCode.OK, an excepcional error occurred. The reason is stored in process.errorMsg string. This function then uses the probeltf to send a message to the	
	manager with the format detailed in CmdPlatform.asyncError() method.	
Author	ismael	
Create Date Time	Oct 4, 2012 1:32:39 AM	
Last Modified	Oct 5, 2012 1:57:36 PM	
Ordered	false	

Unique	true
Query	false

Kelationalipa		
Unnamed Association		
To (packet)	Name	Value
	End Model Element	packet
	Author	ismael
	Create Date Time	Sep 19, 2012 8:59:11 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Sep 19, 2012 8:59:11 PM	
Last Modified	Oct 7, 2012 9:07:22 PM	
Derived	false	

Unnamed Association		
To (loaded_waveforms)	Name	Value
	End Model Element	waveform
	Author	ismael
	Create Date Time	Sep 17, 2012 12:28:31 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	waveforms_MAX
	Visibility	public
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Sep 17, 2012 12:28:31 AM	
Last Modified	Oct 7, 2012 9:07:22 PM	
Derived	false	

uses : Import	
То	hwapi
Visibility	Unspecified
Stereotypes	import
Author	ismael
Create Date Time	Oct 5, 2012 3:30:12 PM
Last Modified	Oct 5, 2012 3:38:03 PM

module_interface

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false

Root	false
Documentation	Data interface between modules.
Author	ismael
Create Date Time	Sep 17, 2012 8:38:51 PM
Last Modified	Oct 7, 2012 8:25:24 PM

Attributes

public id : int					
Documentation	Unique id ir	Unique id in the waveform			
Author	ismael				
Create Date Time	Sep 12, 2012	1:50:47 AM			
Last Modified	Sep 21, 2012	12:15:33 AM			
Туре	int	int			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false				
Read Only	false				
Leaf	false				

public bw_total_mbpts : float				
Documentation	interface bandwidth requirements in MBPTS			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 21, 2012 12:15:33 Af	М		
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public bw_use_mbpts : float	
	Used bandwidth (in MBPTS). *NOTE*: Unlike module's ExecInfo, the interfaces are assumed to use constant bandwidth.
Author	ismael

Create Date Time	Sep 16, 2012	Sep 16, 2012 11:29:11 PM			
Last Modified	Sep 21, 2012	Sep 21, 2012 12:15:33 AM			
Туре	float		,		
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified	Unspecified			
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public name : string				
Documentation	Name of the interface			
Author	ismael			
Create Date Time	Sep 17, 2012 8:38:59 PM			
Last Modified	Sep 21, 2012 12:15:33 A	M		
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public remoteltfName : string			
Author	ismael		
Create Date Time	Oct 2, 2012 12:07:15 PM		
Last Modified	Oct 2, 2012 12:17:11 PM		
Туре	string		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public remoteObjName : string				
Author	ismael			
Create Date Time	Oct 2, 2012 12:07:24 PM			
Last Modified	Oct 2, 2012 12:17:11 PM			
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public remoteltfld : int					
Author	ismael	ismael			
Create Date Time	Oct 2, 2012 1	2:08:48 PM			
Last Modified	Oct 2, 2012 1	2:17:11 PM			
Туре	o int	int int			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public remoteObjld : int				
Author	ismael			
Create Date Time	Oct 2, 2012 12:08:52 PM			
Last Modified	Oct 2, 2012 12:17:11 PM			
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public phyltfld : int				
Author	ismael			
Create Date Time	Oct 2, 2012 12:09:12 PM			
Last Modified	Oct 2, 2012 12:17:11 PM			
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public delay : int					
Documentation	Interface delay, in tin	Interface delay, in timeslots			
Author	ismael				
Create Date Time	Oct 2, 2012 12:51:38 PM	_			
Last Modified	Oct 2, 2012 1:01:12 PM				
Туре	o int	o int			
Allow Empty Name	false	_			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public active : boolean				
Author	ismael			
Create Date Time	Oct 2, 2012 1:	08:09 PM		
Last Modified	Oct 2, 2012 1:	10:27 PM		
Туре	boolean			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false		,	

public serialize (pkt : packet)				
Parameters	pkt	pkt		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	acket packet		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation	Otherwise			
	- Do nothing	- Do nothing		
Author	ismael	ismael		
Create Date Time	Sep 13, 2012 10:30:12 F	Sep 13, 2012 10:30:12 PM		
Last Modified	Oct 7, 2012 8:25:24 PM	Oct 7, 2012 8:25:24 PM		
Ordered	false	false		
Unique	true			
Query	false			

public unserializeTo (pkt : packet, dest : serializable)				
Parameters	pkt	pkt		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	■ packet		
	Direction	inout		
	dest	dest		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation	Save all attributes	Save all attributes		
Author	ismael	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PM			

Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

Unnamed Generalization	ו
From	serializable
Author	ismael
Create Date Time	Sep 17, 2012 8:39:17 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Association				
From (module)	Name	Value		
	End Model Element	module		
	Author	ismael		
	Create Date Time	Sep 17, 2012 8:39:23 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	Composited		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 17, 2012 8:39:23 PM			
Last Modified	Oct 7, 2012 9:07:22 PM			
Derived	false			

module_execinfo

Name	Value
Name	value

Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The class attributes save information relative to the execution of the module.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 8:25:24 PM

public module_ts : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public node_ts : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public mean_exec_us : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false Setter false			
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_exec_us : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false Setter false			
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public mean_rel_us : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47	AM		
Last Modified	Sep 17, 2012 5:48:10	РМ		
Туре	int			
Allow Empty Name	false			
Getter	false Setter false			
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_rel_us : int				
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 17, 2012 5:48:10 PM			
Туре	int			
Allow Empty Name	false			
Getter	false Setter false			
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public mean_mopts : float				
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1:50:47 A	M		
Last Modified	Sep 17, 2012 5:48:10 F	M		
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_mopts : float			
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM	1	
Last Modified	Sep 17, 2012 5:48:10 PM	1	
Туре	float		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public t_exec : time_t				
Author	ismael			
Create Date Time	Oct 2, 2012 1	1:03:57 AM		
Last Modified	Oct 2, 2012 1	I:12:46 AM		
Type Modifier	[3]			
Туре	time_t			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Operatione				
public serialize (pkt : packet)				
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	- Save all attributes			
Author	ismael			
Create Date Time	Sep 13, 2012 10:30:12 PM			
Last Modified	Oct 7, 2012 8:25:24 PM			
Ordered	false			
Unique	true			
Query	false			

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
	dest			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Do nothing			
Author	ismael			
Create Date Time	Sep 14, 2012 1:49:55 PM			
Last Modified	Sep 24, 2012 1:23:55 PM			
Ordered	false			
Unique	true			
Query	false			

Unnamed Association				
From	Name	Value		
	End Model Element	module		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	public		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:07:22 PM			
Derived	false			

Unnamed Generalization	
From	serializable serializable
Author	ismael
Create Date Time	Sep 16, 2012 11:37:11 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

waveform

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public

Leaf	false
Root	false
Documentation	Used by the node to save the loaded waveforms, its modules and variables. At LOAD command, the class is received and serializedTo() a free Waveform object instance. Then waveform attributes, modules and variables and all their attributes are created on pre-allocated objects instances.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 9:07:22 PM

public id : int				
Documentation	Automatically generated waveform id. Must be unique in the platform.			
Author	ismael			
Create Date Time	Sep 12, 2012 1	:50:47 AM		
Last Modified	Sep 18, 2012 1	Sep 18, 2012 12:34:45 PM		
Туре	int	int		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified	Unspecified		
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public name : string				
Author	ismael	ismael		
Create Date Time	Sep 12, 2012	1:50:47 AM		
Last Modified	Sep 17, 2012 5	5:48:10 PM		
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None	None		
Derived Union	false			
Read Only	false			
Leaf	false			

Operations

public serialize (pkt : pac	ket)			
Parameters	pkt	pkt		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	■ packet		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation	Save attributes and nof_modules	Save attributes and call waveform.moduleObj[i].serialize() for all nof_modules		
Author	ismael	ismael		
Create Date Time	Sep 13, 2012 10:30:12 F	Sep 13, 2012 10:30:12 PM		
Last Modified	Oct 7, 2012 8:25:24 PM	Oct 7, 2012 8:25:24 PM		
Ordered	false	false		
Unique	true	true		
Query	false	false		

public unserializeTo (pkt	: packet, dest : serializable)			
Parameters	pkt			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	acket packet		
	Direction	inout		
	dest	de ea		
	Multiplicity			
	Author	ismael		
	Create Date Time	Sep 14, 2012 1:50:19 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	serializable		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation		Save attributes to the object instance and call waveform.moduleObj[i].unserializeTo() all nof_modules module instances		
Author	ismael	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PM	Sep 14, 2012 1:49:55 PM		

Last Modified	Sep 24, 2012 1:23:55 PM
Ordered	false
Unique	true
Query	false

relationships				
Unnamed Association				
To (modules)	Name	Value		
	End Model Element	module		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	modules_MAX		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false	false		
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 7, 2012 9:24:50 PM			
Derived	false			

Unnamed Association				
To (status)	Name	Value		
	End Model Element	waveform_status		
	Author	ismael		
	Create Date Time	Oct 7, 2012 9:00:56 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind None			
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false	false		
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Oct 7, 2012 9:00:56 PM			
Last Modified	Oct 7, 2012 9:07:22 PM	Oct 7, 2012 9:07:22 PM		
Derived	false			

Unnamed Association				
From	Name	Value		
	End Model Element	a_node		
	Author	ismael		
	Create Date Time	Sep 17, 2012 12:28:31 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false	false		
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael			
Create Date Time	Sep 17, 2012 12:28:31 AM	Sep 17, 2012 12:28:31 AM		
Last Modified	Oct 7, 2012 9:07:22 PM	Oct 7, 2012 9:07:22 PM		
Derived	false			

Unnamed Generalization	
From	serializable
Author	ismael
Create Date Time	Sep 13, 2012 10:03:13 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

packet

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false

managing the specific header requirements (in the future, should support different kinds of endianness). The buffer is statically allocated at object creation. Call pkt.add_data() to generate the packet before transmitting the pkt.buffer() buffer of size pkt.size(). At reception, the user must call pkt.read() before using it. The maximum control packet size is 64 Kbytes. Control packets in ALOE include a header with 4 32-bit words: 1) Packet Info 2) Destination Waveform Id 3) Destination Waveform Id 4) Destination Variable Id The first word (Packet info) contains the following information (from LSB to MSB): 1) 07 MANAGER->NODE: Magic word to check if it is a control packet. 0xAF NODE->MANAGER: 0xF0 if command successful or 0x0F if command error. 2) 815 command word (integer, up to 256 commands are	Root	false
		This class generates and reads the contents of a control packet, managing the specific header requirements (in the future, should support different kinds of endianness). The buffer is statically allocated at object creation. Call pkt.add_data() to generate the packet before transmitting the pkt.buffer() buffer of size pkt.size(). At reception, the user must call pkt.read() before using it. The maximum control packet size is 64 Kbytes. Control packets in ALOE include a header with 4 32-bit words: 1) Packet Info 2) Destination Waveform Id 3) Destination Waveform Id 3) Destination Variable Id The first word (Packet info) contains the following information (from LSB to MSB): 1) 07 MANAGER->NODE: Magic word to check if it is a control packet. 0xAF NODE->MANAGER: 0xF0 if command successful or 0x0F if command error. 2) 815 command word (integer, up to 256 commands are supported) 3) 1631 packet size in bytes (integer, up to 65536 bytes can be transferred)
Author ismael	Author	ismael
Create Date Time Sep 12, 2012 1:50:47 AM	Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified Oct 6, 2012 12:14:27 PM		

public buffer : ALOEClasses.Utils.void				
Documentation	This is the pointer to the packet buffer. The buffer is statically allocated at object creation.			
Author	ismael	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 5, 2012 1:47:35 PM			
Type Modifier	*			
Туре	ALOEClasses.Utils.void			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			

Aggregation	None
Derived Union	false
Read Only	false
Leaf	false

public buffer_sz : int				
Documentation	Size of the	Size of the packet buffer		
Author	ismael			
Create Date Time	Sep 12, 2012	1:50:47 AM		
Last Modified	Sep 19, 2012	7:45:57 PM		
Initial Value	0			
Туре	int	int		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public w_ptr : int				
Documentation	Packet write	pointer		
Author	ismael			
Create Date Time	Sep 19, 2012 7	7:43:35 PM		
Last Modified	Oct 5, 2012 1:5	57:36 PM		
Initial Value	0	·		
Туре	int int	,		
Allow Empty Name	false	,		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false	·		
Read Only	false			
Leaf	false			

public r_ptr : int	
Documentation	Packet read pointer
Author	ismael
Create Date Time	Sep 19, 2012 7:44:50 PM
Last Modified	Oct 5, 2012 1:57:36 PM

Initial Value	0			
Туре	o int	-		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public clear ()	
Static	false
Leaf	false
Documentation	Clears the packet contents and its header (including command type)
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Sep 19, 2012 7:45:57 PM
Ordered	false
Unique	true
Query	false

public read ()	
Static	false
Leaf	false
Documentation	Reads the packet header. This function must be called at reception before calling get_cmd() or get_data().
Author	ismael
Create Date Time	Sep 19, 2012 7:53:48 PM
Last Modified	Sep 19, 2012 7:55:58 PM
Ordered	false
Unique	true
Query	false

public buffer () : void	
Static	false
Leaf	false
Documentation	Returns a pointer to the packet buffer (for transmission and reception through the interface functions)
Author	ismael

Create Date Time	Sep 19, 2012 7:45:43 PM
Last Modified	Sep 19, 2012 7:55:58 PM
Type Modifier	*
Ordered	false
Unique	true
Query	false

public set_cmd (cmd : Command)		
Parameters	cmd	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Last Modified	Sep 13, 2012 10:59:26 PM
	Туре	Command
	Direction	inout
Static	false	
Leaf	false	
Documentation	Defines the command field on the packet header.	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Sep 19, 2012 7:35:57 PM	
Ordered	false	
Unique	true	
Query	false	

public get_cmd () : Command	
Static	false
Leaf	false
Documentation	returns the command field from the packet header.
Author	ismael
Create Date Time	Sep 13, 2012 8:56:26 PM
Last Modified	Sep 19, 2012 7:45:57 PM
Ordered	false
Unique	true
Query	false

public add_data (data : void*, len : int) : int

Parameters	data		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Last Modified	Sep 12, 2012 2:06:51 AM	
	Туре	■ void*	
	Direction	inout	
	len		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Last Modified	Sep 19, 2012 7:55:58 PM	
	Туре	int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Appends "len" bytes from "data" pointer to the end of the packet unless there is not enough space in the packet. Returns the number of bytes that where successfully appended.		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Sep 19, 2012 7:55:58 PM		
Ordered	false		
Unique	true		
Query	false		

public get_data (buffer : void, len : int) : int

Parameters	buffer		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 19, 2012 7:55:59 PM	
	Last Modified	Sep 19, 2012 7:57:44 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	len		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 19, 2012 7:55:12 PM	
	Last Modified	Sep 19, 2012 7:55:58 PM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	"buffer" unless the packe	packet data to the buffer pointed by t has no more data to read. Returns where successfully copied.	
Author	ismael		
Create Date Time	Sep 19, 2012 7:54:59 PM		
Last Modified	Sep 19, 2012 7:57:44 PM		
Ordered	false		
Unique	true		
Query	false		

public max_size () : int	
Static	false
Leaf	false
Documentation	Returns the maximum size of the packet (in bytes)
Author	ismael
Create Date Time	Sep 13, 2012 8:57:08 PM
Last Modified	Sep 19, 2012 7:55:58 PM
Ordered	false
Unique	true
Query	false

public size () : int		
Static	false	
Leaf	false	

Documentation	Returns the current size of the packet (in bytes)		
Author	ismael		
Create Date Time	Sep 14, 2012 12:40:56 AM		
Last Modified	Sep 19, 2012 7:55:58 PM		
Ordered	false		
Unique	true		
Query	false		

public set_ack (ack : boolean)			
Parameters	ack		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 19, 2012 8:59:34 PM	
	Last Modified	Sep 19, 2012 9:01:21 PM	
	Туре	boolean	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 19, 2012 8:59:20 PM		
Last Modified	Oct 5, 2012 1:47:35 PM		
Ordered	false		
Unique	true		
Query	false		

public get_ack () : boolean		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 19, 2012 8:59:34 PM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public set_dest (waveform_id : int, module_id : int, variable_id : int)

Parameters	waveform_id			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 24, 2012 12:59:49 PM		
	Last Modified	Oct 5, 2012 6:17:55 PM		
	Туре	int int		
	Direction	inout		
	module_id			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 24, 2012 12:59:49 PM		
	Last Modified	Oct 5, 2012 6:17:55 PM		
	Type int Direction inout			
	variable_id			
	Multiplicity	Unspecified		
	Author ismael			
	Create Date Time	Sep 24, 2012 12:59:49 PM		
	Last Modified	Oct 5, 2012 6:17:55 PM		
	Туре	int int		
	Direction	inout		
Static	false			
Leaf	false			
Author	ismael			
Create Date Time	Sep 24, 2012 12:59:28 PM			
Last Modified	Oct 5, 2012 6:17:55 PM			
Ordered	false			
Unique	true			
Query	false			

public get_dest (waveform_id : int, module_id : int, variable_id : int)

Parameters	waveform_id			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 24, 2012 1:00:12 PM		
	Last Modified	Oct 5, 2012 6:17:55 PM		
	Type Modifier	&		
	Туре	o int		
	Direction	inout		
	module_id			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 24, 2012 1:00:12 PM		
	Last Modified	Oct 5, 2012 6:17:55 PM		
	Type Modifier	&		
	Туре	o int		
	Direction	inout		
	variable_id			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 24, 2012 1:00:12 PM		
	Last Modified	Oct 5, 2012 6:17:55 PM		
	Type Modifier	&		
	Туре	o int		
	Direction	inout		
Static	false			
Leaf	false			
Author	ismael			
Create Date Time	Sep 24, 2012 12:59:59 PM			
Last Modified	Oct 5, 2012 6:17:55 PM			
Ordered	false			
Unique	true			
Query	false			

public get_header () : int			
Static	false		
Leaf	false		
Documentation	returns the first 32-bit word of the packet		
Author	ismael		
Create Date Time	Oct 4, 2012 10:14:23 AM		
Last Modified	Oct 5, 2012 1:47:35 PM		

Ordered	false
Unique	true
Query	false

Unnamed Association				
From	Name	Value		
	End Model Element	a_node		
	Author	ismael		
	Create Date Time	Sep 19, 2012 8:59:11 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 19, 2012 8:59:11 PM			
Last Modified	Oct 7, 2012 9:07:22 PM			
Derived	false			

module

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Stores the attributes of waveform module.
Author	ismael

Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 8:25:24 PM

public id : int					
Documentation	Unique number (the constructor.	Unique number (in the waveform) generated automatically in the constructor.			
Author	ismael				
Create Date Time	Sep 12, 2012 1:50:47	Sep 12, 2012 1:50:47 AM			
Last Modified	Sep 21, 2012 12:15:	Sep 21, 2012 12:15:33 AM			
Туре	int	int			
Allow Empty Name	false				
Getter	false	Setter		false	
Derived	false				
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false				
Read Only	false	false			
Leaf	false				

public name : string			
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Sep 17, 2012 5:48:10 PM		
Туре	string		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public binary : string	
Documentation	name of the binary, not the full path. Depending on the platform it can be a stand-alone executable (program) or a library which is dynamically loaded.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Sep 21, 2012 12:15:33 AM
Туре	string
Allow Empty Name	false

Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false		•	

public c_mopts : float				
Documentation	Module prod	Module processing requirements in MOPTS		
Author	ismael		,	
Create Date Time	Sep 12, 2012 1	:50:47 AM		
Last Modified	Sep 21, 2012 1	2:15:33 AM		
Туре	float	float		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false	false		
Leaf	false			

public processor_idx : int			
Documentation	Processor id where the	ne module has been r	napped.
Author	ismael		
Create Date Time	Sep 24, 2012 12:08:33 PM	M	
Last Modified	Oct 5, 2012 1:57:36 PM		
Туре	int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public status : int					
Author	ismael				
Create Date Time	Oct 2, 2012 1	1:55:35 AM			
Last Modified	Oct 2, 2012 1	2:02:48 PM			
Туре	int				
Allow Empty Name	false				
Getter	false	5	Setter	false	
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public nof_reporting_vars : int			
Author	ismael		
Create Date Time	Oct 3, 2012 12:59:14 PM		
Last Modified	Oct 3, 2012 1:03:08 PM		
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public serialize (pkt : packe	et)			
Parameters	pkt	pkt		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	a packet		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation		Call moduleObj.execInfo.serialize() and moduleObj.variables.serialize() to all variables		
Author	ismael			

Create Date Time	Sep 13, 2012 10:30:12 PM
Last Modified	Oct 7, 2012 8:25:24 PM
Ordered	false
Unique	true
Query	false

Query	laise		
nublic unserializeTo (nk	t : packet, dest : serializable)		
Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	packet	
	Direction	inout	
	dest		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	serializable	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	for all variables (see	and call Variables[i].unserializeTo(moduleObj.moduleVariable moduleVariables.length) uleObj.itfs[i].serializeTo() for all nof_itfs	
Author	ismael	ismael	
Create Date Time	Sep 14, 2012 1:49:55 PM	Sep 14, 2012 1:49:55 PM	
Last Modified	Sep 24, 2012 1:23:55 PM	Sep 24, 2012 1:23:55 PM	
Ordered	false		
Unique	true		

false

Query

Unnamed Association				
To (execinfo)	Name	Value		
	End Model Element	module_execinfo		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified	Unspecified		
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM			
Last Modified	Oct 7, 2012 9:07:22 PM	Oct 7, 2012 9:07:22 PM		
Derived	false			

Unnamed Association				
To (module_variables)	Name	Value		
	End Model Element	module_variable		
	Author	ismael		
	Create Date Time	Sep 12, 2012 1:50:47 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	module_variables_MAX		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:07:22 PM			
Derived	false	false		

Unnamed Association			
To (itfs)	Name	Value	
	End Model Element	module_interface	
	Author	ismael	
	Create Date Time	Sep 17, 2012 8:39:23 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	module_interfaces_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 17, 2012 8:39:23 PM		
Last Modified	Oct 7, 2012 9:07:22 PM		
Derived	false		

Unnamed Association			
To (reporting_variables)	Name	Value	
	End Model Element	module_variable	
	Author	ismael	
	Create Date Time	Oct 5, 2012 3:33:50 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	reporting_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 5, 2012 3:33:50 PM		
Last Modified	Oct 7, 2012 9:07:22 PM		
Derived	false		

Unnamed Association			
From (waveform)	Name	Value	
	End Model Element	waveform	
	Author	ismael	
	Create Date Time	Sep 12, 2012 1:50:47 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	public	
	Aggregation Kind	Composited	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM		
Last Modified	Oct 7, 2012 9:24:50 PM		
Derived	false		

Unnamed Generalization		
From	serializable	
Author	ismael	
Create Date Time	Sep 16, 2012 11:37:14 PM	
Last Modified	Oct 6, 2012 12:14:27 PM	
Substitutable	false	
Visibility	Unspecified	

module_variable

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false

Root	false
Documentation	Class Inherited from the Variable class. This is used by the ALOE-Node only
Author	ismael
Create Date Time	Sep 14, 2012 2:38:46 PM
Last Modified	Oct 7, 2012 8:25:24 PM

private shm_addr : void			
Documentation	Pointer to the shared stored.	memory region wher	e the variable is
Author	ismael		
Create Date Time	Sep 14, 2012 2:40:19 PM		
Last Modified	Oct 5, 2012 1:57:36 PM		
Type Modifier	*		
Туре	o void		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public last_period_ts : int			
Documentation	Last timeslot the variable value was reported during reporting		
Author	ismael		
Create Date Time	Sep 19, 2012 8:21:45 PM		
Last Modified	Oct 5, 2012 1:57:36 PM		
Туре	int int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public report_packet : packet			
Author	ismael		
Create Date Time	Oct 3, 2012 1:00:03 PM		
Last Modified	Oct 5, 2012 1:57:36 PM		
Туре	packet		
Allow Empty Name	false	-	
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public serialize (pkt : packet)				
Parameters	pkt	pkt		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 13, 2012 11:03:03 PM		
	Last Modified	Oct 5, 2012 1:47:35 PM		
	Туре	packet		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation	Serialize all attribute size>0	Serialize all attributes including variable value (shmPtr) if size>0		
Author	ismael			
Create Date Time	Sep 13, 2012 10:30:12 F	Sep 13, 2012 10:30:12 PM		
Last Modified	Oct 7, 2012 8:25:24 PM	Oct 7, 2012 8:25:24 PM		
Ordered	false	false		
Unique	true	true		
Query	false			

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	packet	
	Direction	inout	
	dest		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	serializable	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Save window and period attributes. If size>0, save variable value to shmPtr while checking size. If new window>0 and period>0, add the variable to module.reportingVariable and increase module.nof_report_vars clear the reportPacket and set periodCnt=0 If new window=0 and period=0, remove the variable to module.reportingVariable and decrease module.nof_report_vars		
Author	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PM		
Last Modified	Oct 3, 2012 1:03:08 PM		
Ordered	false		
Unique	true		
	*	false	

Unnamed Association		
From	Name	Value
	End Model Element	module
	Author	ismael
	Create Date Time	Sep 12, 2012 1:50:47 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	public
	Aggregation Kind	Composited
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 7, 2012 9:07:22 PM	
Derived	false	

Unnamed Generalization	
From	■ variable
Author	ismael
Create Date Time	Sep 19, 2012 8:22:35 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Association			
From	Name	Value	
	End Model Element	module	
	Author	ismael	
	Create Date Time	Oct 5, 2012 3:33:50 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	Unspecified	
	Aggregation Kind	Composited	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 5, 2012 3:33:50 PM		
Last Modified	Oct 7, 2012 9:07:22 PM		
Derived	false		

packet_commands

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	enumeration
Documentation	Command type constants
Author	ismael
Create Date Time	Sep 13, 2012 9:55:48 PM
Last Modified	Oct 6, 2012 12:14:27 PM

public LOAD				
Documentation	Loads a wa	veform		
Author	ismael			
Create Date Time	Sep 13, 2012	9:56:15 PM		
Last Modified	Oct 5, 2012 3:	27:28 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public SET				
Documentation	Modifies a node object instance			
Author	ismael			
Create Date Time	Sep 24, 2012	12:58:38 PM		
Last Modified	Oct 5, 2012 3:	Oct 5, 2012 3:27:28 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public GET			
Documentation	Reads a node object instance		
Author	ismael		
Create Date Time	Sep 24, 2012 12:58:41 PM	И	
Last Modified	Oct 5, 2012 3:27:28 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

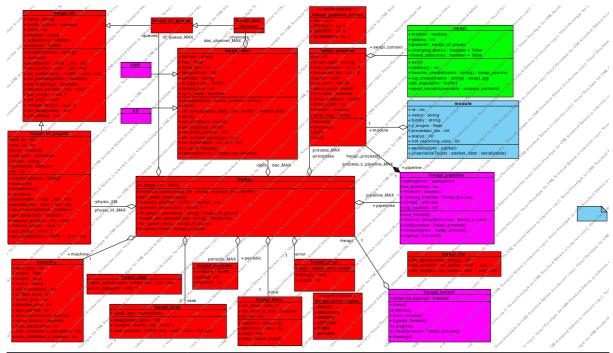
public CONNECT				
Documentation	Node conne	ects output interfaces		
Author	ismael	,	·	
Create Date Time	Sep 26, 2012	10:41:28 AM		
Last Modified	Oct 5, 2012 3	27:28 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			·

public DISCONNECT				
Documentation	Node closes all connections			
Author	ismael			
Create Date Time	Sep 26, 2012	10:41:32 AM		
Last Modified	Oct 5, 2012 3:	Oct 5, 2012 3:27:28 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public HWINFO			
Documentation	Obtains hardware information (+machine structure in HWAPI)		
Author	ismael		
Create Date Time	Oct 5, 2012 3:22:48 PM		
Last Modified	Oct 5, 2012 3:27:28 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Class Diagram

hwapi



Name	Value
Name	hwapi
Author	ismael
Create Date Time	Oct 5, 2012 4:11:42 PM
Last Modified	Oct 7, 2012 9:28:54 PM

Summary

Name	Documentation
hwapi_process_er	rors
hwapi_itf	Abstract class that manages the hwapi data or control, physical or logical interfaces.
hwapi_itf_queue	A Queue is an interface used for inter-module communications. It implements the methods of the Interface class only
hwapi_dac_chann	el
swapi	This is the module's interface to ALOE. It provides functions for creation of interfaces, global variables, pre-initialized values, log files and time counters. See swapi_module class for information on how to define a module.
hwapi_dac	This is the interface to the digital converters. Each converter must implement the interface in a particular class
hwapi_process	A HWAPI Process is defined as dynamically loaded shared library with two symbols that *MUST* be defined:startup(arg0,arg1): This function is called at load-time and is not subject to real-time constraints.

	runCycle(): This function is called each time-slot and is subject to real-time constraints. It is used to load and execute signal processing waveform modules. The HWAPI.Process objects are instantiated by Base.initializeNode() function at boot. A call to create() loads the module into memory. A call to startup() calls the _startup() function and a call to places the _runCycle() function into the pipelined execution queue (see Proc-Thread class)
UHD	Implementation of the DAC interface to the Universal Hardware Driver (UHD) for USRP family of devices.
module	Stores the attributes of waveform module.
■ X5	
hwapi_itf_physic	In linux, physical interfaces are TCP/IP Ethernet interfaces. They inherit from the Interface abstract class. Supported protocols are TCP and UDP. Modes can be IN, which creates an input socket and accepts the connection in TCP; or OUT, which creates the output socket.
hwapi_pipeline	A ProcThread is a POSIX-thread that runs in a single processor core with real-time priority and FIFO-scheduling (non-preemptable). It has a queue of function pointers which are called one after another. This functions are supposed to run SP tasks. The thread is synchronized with the kernel-thread with a shared memory POSIX semaphore. At the beginning of the timeslot, the kernel-thread actives a semaphore indicating the Proc-Thread may start its execution. After all functions are called, the Proc-Thread blocks on the semaphore again.
	These threads are detachable.
hwapi	The Base HWAPI class abstracts the platform (OS) and hardware particularities, for instance: timers, shared memory, physical interfaces and process creation/scheduling. Only one instance of this class can be created on each node. This is created by the kernel-thread class at boot of every node or by the Manager process. The hwapi is in charge of controlling thread-local-storage. Therefore, there is no need to pass a pointer to the hwapi context to each function call. In linux, can be implemented using POSIX TLS orthread GCC. However, this is not strictly required since only one execution thread access thread-sensible functions at a time.
hwapi_file	A non-instantiable class (no attributes). Just a collection of functions associated to file management.
machine	Public structure configured at initialize() from the information read from platform.conf. Stores some properties of the local machine architecture.
hwapi_error	
hwapi_periodic	
hwapi_shm	A non-instantiable class (no attributes). Just a collection of functions associated to shared memory management.
hwapi_kernel	The HWAPI kernel schedules the execution of the ALOE-Node class and waveform modules in each platform's node. The main() is implemented in this class. When it starts, it creates the HWAPI-base class (which

	instantiates the rest of hwapi classes) and the ALOE-Node class (which processes commands from the manager). It initializes hardware devices and runs the main kernel timer. The execution timer, in Linux, can be driven from three different sources, chosen from the platform.conf file: 1) POSIX real-time timer 2) Synchronization packet, through a POSIX semaphore 3) Digital converter, through a POSIX semaphore
hwapi_error_codes	
hwapi_time	
hwapi_task	

Details

hwapi_process_errors

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	enumeration
Author	ismael
Create Date Time	Oct 4, 2012 9:08:54 AM
Last Modified	Oct 6, 2012 12:14:27 PM

public OK : int 0				
Author	ismael			
Create Date Time	Oct 4, 2012 9:	09:01 AM		
Last Modified	Oct 4, 2012 9:	18:48 AM		
Туре	int 0		·	
Allow Empty Name	false		'	
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public RTFAULT : int 1					
Author	ismael				
Create Date Time	Oct 4, 2012 9	:09:09 AM			
Last Modified	Oct 4, 2012 9	:18:48 AM			
Туре	int 1				
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public SIGSEGV : int 2				
Author	ismael			
Create Date Time	Oct 4, 2012 9:09:27 AM			
Last Modified	Oct 4, 2012 9:18:48 AM			
Туре	int 2			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public RUNERROR : int 3				
Author	ismael			
Create Date Time	Oct 4, 2012 9:09:37 AM			
Last Modified	Oct 4, 2012 9:18:48 AM			
Туре	int 3			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

lack | hwapi_itf

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Abstract class that manages the hwapi data or control, physical or logical interfaces.
Author	ismael
Create Date Time	Sep 18, 2012 9:47:30 AM
Last Modified	Oct 6, 2012 12:52:13 PM

public name : string				
Author	ismael			
Create Date Time	Sep 17, 2012 7:3	8:59 PM		
Last Modified	Sep 24, 2012 11:	51:37 AM		
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public mode_is_input : boolean				
Author	ismael			
Create Date Time	Sep 17, 2012 7:42:21 PM			
Last Modified	Oct 5, 2012 2:11:57 PM			
Туре	boolean			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public delay : int					
Documentation	Interface de	elay, in timesl	lots		
Author	ismael			,	
Create Date Time	Sep 22, 2012	10:14:29 PM			
Last Modified	Oct 5, 2012 2	:11:57 PM			
Туре	o int				
Allow Empty Name	false				
Getter	false	Set	tter	false	
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public address : string				
Author	ismael			
Create Date Time	Sep 26, 2012 11:23:17 A	М	_	
Last Modified	Oct 5, 2012 2:11:57 PM			
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public is_blocking : boolean				
Author	ismael			
Create Date Time	Sep 26, 2012 11:40:33 A	М		
Last Modified	Oct 5, 2012 2:11:57 PM			
Туре	boolean			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public callback : fncPtr					
Author	ismael				
Create Date Time	Oct 4, 2012 9	:46:06 AM			
Last Modified	Oct 5, 2012 2	:20:03 PM			
Type Modifier	*				
Туре	fncPtr		·		
Allow Empty Name	false		,		
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false				
Read Only	false				
Leaf	false				

Operations

public create (address : string)		
Parameters	address	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 26, 2012 11:23:54 AM
	Last Modified	Sep 26, 2012 11:33:55 AM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Documentation	Creates and connects the interface. The +name and +mode attributes *MUST* be filled before calling to this method.	

Author	ismael
Create Date Time	Sep 14, 2012 1:06:27 PM
Last Modified	Sep 26, 2012 11:33:55 AM
Ordered	false
Unique	true
Query	false

public remove ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 17, 2012 1:07:33 AM
Last Modified	Sep 26, 2012 11:23:54 AM
Ordered	false
Unique	true
Query	false

public send (buffer : void, len : int)		
Parameters	buffer	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 1:08:16 AM
	Last Modified	Sep 17, 2012 1:11:14 AM
	Type Modifier	*
	Туре	void
	Direction	inout
	I	
	len Multiplicity	U
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 1:08:16 AM
	Last Modified	Sep 17, 2012 1:11:14 AM
	Туре	int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Sep 18, 2012 10:05:47 AM	
Ordered	false	
Unique	true	
Query	false	

public recv (buffer : voice	d, len : int)		
Parameters	buffer	buffer	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 1:08:19 AM	
	Last Modified	Sep 17, 2012 1:11:14 AM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	len		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 1:08:19 AM	
	Last Modified	Sep 17, 2012 1:11:14 AM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM	
Last Modified	Sep 18, 2012 10:05:47 A	Sep 18, 2012 10:05:47 AM	
Ordered	false	false	
Unique	true	true	
Query	false	false	

public set_callback (fnc : fncPtr, prio : int)

Parameters	fnc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 18, 2012 10:18:31 AM	
	Last Modified	Sep 18, 2012 10:22:47 AM	
	Type Modifier	*	
	Туре	fncPtr	
	Direction	inout	
	prio		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 4, 2012 9:57:17 AM	
	Last Modified	Oct 4, 2012 10:01:36 AM	
	Туре	int int	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Documentation	function creates a the for new packets. Whe is called. The fnc() he packet. Note that the calls recv and a packet.	Adds a callback handler to the interface with priority prio. This function creates a thread with priority prio which blocks waiting for new packets. When the packet is ready to be received, fnc() is called. The fnc() handler then should use recv() to receive the packet. Note that the behavior in unspecified if another thread calls recv and a packet arrives. prio=0 indicates non-realtime default priority.	
Author	ismael	ismael	
Create Date Time	Sep 18, 2012 10:16:28 A	Sep 18, 2012 10:16:28 AM	
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false	false	
Unique	true	true	
Query	false	false	

public set_blocking (block : boolean)			
Parameters	block	block	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 26, 2012 11:40:23 AM	
	Last Modified	Sep 26, 2012 11:43:55 AM	
	Туре	boolean	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Author	ismael	ismael	
Create Date Time	Sep 26, 2012 11:40:10 A	Sep 26, 2012 11:40:10 AM	
Last Modified	Oct 5, 2012 2:20:03 PM	Oct 5, 2012 2:20:03 PM	
Ordered	false	false	
Unique	true	true	
Query	false	false	

public get_blocking () : boolean		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 26, 2012 11:40:23 AM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public request_ptr (size : int) : void		
Parameters	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:34:46 PM
	Last Modified	Sep 17, 2012 7:38:35 PM
	Туре	int int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 17, 2012 7:34:36 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Type Modifier	*	
Ordered	false	
Unique	true	
Query	false	

public put_ptr (ptr : void)			
Parameters	ptr	ptr	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 12:01:02 PM	
	Last Modified	Sep 24, 2012 12:01:38 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Author	ismael	ismael	
Create Date Time	Sep 24, 2012 12:00:05 F	Sep 24, 2012 12:00:05 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	Oct 5, 2012 2:20:03 PM	
Ordered	false	false	
Unique	true	true	
Query	false	false	

public get_ptr () : void	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 17, 2012 7:35:13 PM
Last Modified	Oct 5, 2012 2:20:03 PM
Type Modifier	*
Ordered	false
Unique	true
Query	false

public release_ptr (ptr : void)		
Parameters	ptr	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:35:13 PM
	Last Modified	Sep 17, 2012 7:52:29 PM
	Type Modifier	*
	Туре	o void
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 17, 2012 7:34:46 PM	
Last Modified	Oct 6, 2012 12:52:13 PM	
Ordered	false	
Unique	true	
Query	false	

public set_delay (delay : in	nt)		
Parameters	delay	delay	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 22, 2012 10:14:43 PM	
	Last Modified	Sep 22, 2012 10:17:19 PM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 22, 2012 10:14:35 P	PM	
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false		
Unique	true		
Query	false		

public get_delay () : int		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 22, 2012 10:14:43 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

Unnamed Generalization	
То	hwapi_itf_physic
Author	ismael
Create Date Time	Sep 18, 2012 9:48:09 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization		
То	hwapi_itf_queue	
Author	ismael	
Create Date Time	Sep 18, 2012 9:48:11 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	
Substitutable	false	
Visibility	Unspecified	

hwapi_itf_queue

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A Queue is an interface used for inter-module communications. It implements the methods of the Interface class only
Author	ismael
Create Date Time	Sep 17, 2012 5:44:23 PM
Last Modified	Oct 6, 2012 12:35:11 PM

Relationships

Unnamed Generalization	
То	hwapi_dac_channel
Author	ismael
Create Date Time	Sep 18, 2012 10:12:39 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
From	hwapi_itf
Author	ismael
Create Date Time	Sep 18, 2012 9:48:11 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Association			
From	Name	Value	
	End Model Element	hwapi	
	Author	ismael	
	Create Date Time	Oct 6, 2012 12:16:29 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	Aggregation	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false	false	
Leaf	false		
Visibility	Unspecified	Unspecified	
Author	ismael	ismael	
Create Date Time	Oct 6, 2012 12:16:29 PM	Oct 6, 2012 12:16:29 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	Oct 7, 2012 7:37:26 PM	
Derived	false		

hwapi_dac_channel

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 17, 2012 7:36:05 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Unnamed Generalization	
From	hwapi_itf_queue
Author	ismael
Create Date Time	Sep 18, 2012 10:12:39 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Association		
From	Name	Value
	End Model Element	hwapi_dac
	Author	ismael
	Create Date Time	Oct 1, 2012 12:12:40 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 1, 2012 12:12:40 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

swapi

-	
Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public

Leaf	false
Root	false
Documentation	This is the module's interface to ALOE. It provides functions for creation of interfaces, global variables, pre-initialized values, log files and time counters. See swapi_module class for information on how to define a module.
Author	ismael
Create Date Time	Sep 17, 2012 12:52:20 AM
Last Modified	Oct 7, 2012 2:05:46 PM

public module : module				
Author	ismael	ismael		
Create Date Time	Sep 18, 2012 9:54:02 AM	Л		
Last Modified	Oct 6, 2012 3:01:00 PM			
Туре	module			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public tstamp : int				
Author	ismael			
Create Date Time	Oct 2, 2012 1	2:53:18 PM		
Last Modified	Oct 6, 2012 3	:01:00 PM		
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public probeltf : hwapi_itf_physic			
Author	ismael		
Create Date Time	Oct 3, 2012 11:23:51 AM		
Last Modified	Oct 6, 2012 3:01:00 PM		
Туре	hwapi_itf_physic		
Allow Empty Name	false		
Getter	false Setter false		
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public changing_status : boolean				
Author	ismael			
Create Date Time	Oct 3, 2012 11:	34:19 AM		
Last Modified	Oct 6, 2012 3:0	1:00 PM		
Initial Value	false			
Туре	boolean	o boolean		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false			
Leaf	false	·		

private closed_resources : boolean				
Author	ismael			
Create Date Time	Oct 3, 2012 8:4	46:24 PM	,	
Last Modified	Oct 6, 2012 3:0	01:00 PM		
Initial Value	false			
Туре	boolean	o boolean		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false			
Leaf	false			

Operations

public exit ()	
Static	false
Leaf	false
Documentation	This function is called by the sStop() function and the _abort() functions. It removes the module from the execution pipeline in ProcThread. The next timeslot the module won't be executed.
Author	ismael
Create Date Time	Oct 3, 2012 8:53:03 PM
Last Modified	Oct 6, 2012 3:05:34 PM
Ordered	false
Unique	true
Query	false

public tstamp () : int	
Static	false
Leaf	false
Documentation	Returns the module's timestamp. This is the number of timeslots that the object has executed the INIT an RUN states. This function is always successful.
Author	ismael
Create Date Time	Sep 17, 2012 7:45:40 PM
Last Modified	Oct 6, 2012 11:38:05 AM
Ordered	false
Unique	true
Query	false

Parameters	name		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:48:30 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	1) Find an empty space in +counters 2) call counters[i].create(name) 3) return &counters[i]		
Author	ismael		
Create Date Time	Sep 17, 2012 7:48:12 PM		
Last Modified	Oct 6, 2012 12:53:21 PM		
Ordered	false		
Unique	true		
Query	false		

public log_create (name : string) : swapi_log			
Parameters	name		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 8:51:36 PM	
	Last Modified	Oct 3, 2012 8:54:52 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	1) Find an empty space in +logs 2) call logs[i].create(name) 3) return &logs[i]		
Author	ismael		
Create Date Time	Oct 3, 2012 8:51:29 PM		
Last Modified	Oct 5, 2012 6:37:37 PM		
Ordered	false		
Unique	true		
Query	false		

Parameters	fnc	fnc		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 3, 2012 12:38:51 PM		
	Last Modified	Oct 3, 2012 12:39:13 PM		
	Туре	fncPtr		
	Direction	inout		
Static	false	false		
Leaf	false			
Documentation	wrapper to the modu	wrapper to the module's skeleton new state function.		
Author	ismael			
Create Date Time	Oct 3, 2012 12:38:26 PM	Oct 3, 2012 12:38:26 PM		
Last Modified	Oct 5, 2012 6:37:37 PM			
Ordered	false			
Unique	true			
Query	false			

private report_variable (variable : module_variable)				
Parameters	variable			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 3, 2012 12:39:07 PM		
	Last Modified	Oct 5, 2012 6:37:37 PM		
	Туре	module_variable		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Use the probeltf to send the variable.reportPacket to the manager			
Author	ismael			
Create Date Time	Oct 3, 2012 12:38:51 PM			
Last Modified	Oct 5, 2012 6:37:37 PM			
Ordered	false			
Unique	true			
Query	false			

Unnamed Association				
From	Name	Value		
	End Model Element	hwapi_process		
	Author	ismael		
	Create Date Time	Oct 7, 2012 2:03:04 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 7, 2012 2:03:04 PM	Oct 7, 2012 2:03:04 PM		
Last Modified	Oct 7, 2012 2:05:46 PM	Oct 7, 2012 2:05:46 PM		
Derived	false			

■ hwapi_dac

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	This is the interface to the digital converters. Each converter must implement the interface in a particular class
Author	ismael
Create Date Time	Sep 25, 2012 12:34:57 PM
Last Modified	Oct 6, 2012 12:35:11 PM

public options : string			
Author	ismael		
Create Date Time	Oct 1, 2012 12:13:58 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Туре	string		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public freq : float			
Author	ismael		
Create Date Time	Oct 1, 2012 12:14:07 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Туре	float		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public block_len : int				
Author	ismael			
Create Date Time	Oct 1, 2012 1	2:14:12 PM		
Last Modified	Oct 5, 2012 2	:20:03 PM		
Туре	o int			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false		,	

public sampleType : int			
Author	ismael		
Create Date Time	Oct 1, 2012 12:14:17 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		-

public address : string				
Author	ismael	ismael		
Create Date Time	Oct 1, 2012 12:15	:06 PM		
Last Modified	Oct 5, 2012 2:20:	03 PM		
Туре	string			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public ts_begin_fnc : fncPtr			
Author	ismael		
Create Date Time	Oct 1, 2012 7:13:34 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Type Modifier	*		
Туре	fncPtr		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public thread_prio : int						
Author	ismael	ismael				
Create Date Time	Oct 1, 2012 7:	:17:42 PM				
Last Modified	Oct 5, 2012 2:	:20:03 PM				
Туре	int					
Allow Empty Name	false	false				
Getter	false		Setter		false	
Derived	false	false				
Multiplicity	Unspecified	Unspecified				
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public sync_clock : boolean			
Author	ismael		
Create Date Time	Oct 1, 2012 7:17:51 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Туре	boolean		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Operations

public open (address : string, options : string)

Parameters	address		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 1, 2012 12:14:54 PM	
	Last Modified	Oct 1, 2012 12:19:22 PM	
	Туре	string	
	Direction	inout	
	options		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 1, 2012 12:14:54 PM	
	Last Modified	Oct 1, 2012 12:19:22 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Configures the converter	but does not start sampling	
Author	ismael		
Create Date Time	Oct 1, 2012 12:14:42 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false		
Unique	true		
Query	false		

public close ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Oct 1, 2012 12:14:54 PM
Last Modified	Oct 5, 2012 2:20:03 PM
Ordered	false
Unique	true
Query	false

public set_scheduler (ts_begin_fnc : fncPtr, thread_prio : int)

Parameters	ts_begin_fnc	ts_begin_fnc	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 1, 2012 7:18:20 PM	
	Last Modified	Oct 5, 2012 2:20:03 PM	
	Type Modifier	*	
	Туре	fncPtr	
	Direction	inout	
	thread_prio		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 1, 2012 7:18:20 PM	
	Last Modified	Oct 5, 2012 2:20:03 PM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation		t is governed by DAC clock. Sets ves tsBeginFnc and threadPrio.	
Author	ismael		
Create Date Time	Oct 1, 2012 7:17:58 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false		
Unique	true		
Query	false		

public start ()	
Static	false
Leaf	false
Documentation	Starts sampling. If syncClock==TRUE, create a thread that runs runSyncThread() function with priority threadPrio. If syncClock==FALSE, the transmission and reception of data to/from the converter is governed by the kernel timer thread. the creation of the thread is optional, depending on the behavior of the channel Queues.
Author	ismael
Create Date Time	Oct 1, 2012 7:17:26 PM
Last Modified	Oct 1, 2012 7:28:45 PM
Ordered	false
Unique	true
Query	false

public set_opts (opts : string)			
Parameters	opts	opts	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 18, 2012 10:10:28 AM	
	Last Modified	Sep 18, 2012 10:22:47 AM	
	Туре	string	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Author	ismael		
Create Date Time	Sep 18, 2012 10:10:21 A	M	
Last Modified	Oct 5, 2012 2:20:03 PM	Oct 5, 2012 2:20:03 PM	
Ordered	false	false	
Unique	true	true	
Query	false	false	

public set_freq (freq : float)		
Parameters	freq	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 18, 2012 10:10:57 AM
	Last Modified	Sep 18, 2012 10:22:47 AM
	Туре	float
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 18, 2012 10:10:45 AM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public set_block_len (len : int)		
Parameters	len	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 18, 2012 10:11:29 AM
	Last Modified	Sep 18, 2012 10:22:47 AM
	Туре	int int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 18, 2012 10:11:23 AM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public set_sample_type (type : int)		
Parameters	type	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 1, 2012 12:14:34 PM
	Last Modified	Oct 1, 2012 12:19:22 PM
	Туре	o int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Oct 1, 2012 12:14:28 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public set_bufferSz (in : int, ou	nt, out : int)	
Parameters	in	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 1, 2012 1:04:38 PM
	Last Modified	Oct 1, 2012 1:09:29 PM
	Туре	int int
	Direction	inout
	out	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 1, 2012 1:04:38 PM
	Last Modified	Oct 1, 2012 1:09:29 PM
	Туре	int int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Oct 1, 2012 1:04:18 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

private run_sync_thread ()	
Static	false
Leaf	false
Documentation	Infinite loop. Each loop, a block of blockSize samples is sent/ recv to/from the converter from a given buffer associated with each channel Queue. After this call, the thread calls tsBeginFnc() function, which will post the processing threads semaphores, indicating the start of a new timeslot
Author	ismael
Create Date Time	Oct 1, 2012 7:20:19 PM
Last Modified	Oct 5, 2012 2:20:03 PM
Ordered	false
Unique	true
Query	false

public channel (int ch) : hwapi_dac_channel			
Parameters	int ch	int ch	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 6, 2012 12:34:48 PM	
	Last Modified	Oct 6, 2012 12:35:11 PM	
	Direction	inout	
Static	false	false	
Leaf	false		
Author	ismael		
Create Date Time	Oct 6, 2012 12:34:38 PM		
Last Modified	Oct 6, 2012 12:35:11 PM		
Ordered	false	false	
Unique	true	true	
Query	false		

Unnamed Association		
To (channels)	Name	Value
	End Model Element	hwapi_dac_channel
	Author	ismael
	Create Date Time	Oct 1, 2012 12:12:40 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	dac_channel_MAX
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 1, 2012 12:12:40 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Generalization	
То	■ UHD
Author	ismael
Create Date Time	Oct 1, 2012 1:23:18 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Generalization	
То	■ X5
Author	ismael
Create Date Time	Oct 1, 2012 1:23:21 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

Unnamed Association		
From	Name	Value
	End Model Element	hwapi
	Author	ismael
	Create Date Time	Oct 6, 2012 10:49:36 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 10:49:36 AM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

■ hwapi_process

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A HWAPI Process is defined as dynamically loaded shared library with two symbols that *MUST* be defined:startup(arg0,arg1): This function is called at load-time and is not subject to real-time constraintsrunCycle(): This function is called each time-slot and is subject to real-time constraints. It is used to load and execute signal processing waveform modules. The HWAPI.Process objects are instantiated by Base.initializeNode() function at boot. A call to create() loads the module into memory. A call to startup() calls the _startup() function and a call to places the _runCycle() function into the pipelined execution queue (see Proc-Thread class)
Author	ismael
Create Date Time	Sep 18, 2012 1:00:28 AM
Last Modified	Oct 7, 2012 2:05:46 PM

private pid : int					
Author	ismael				
Create Date Time	Sep 18, 2012	1:27:24 AM			
Last Modified	Sep 24, 2012	11:45:57 AM			
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false				
Read Only	false				
Leaf	false				

public binary_path : string					
	Path to the process binary program code. It can be a program or dynamic library, depending on the platform (dynamic library in linux).				

Author	ismael	ismael			
Create Date Time	Sep 18, 2012 1	:27:33 AM			
Last Modified	Oct 6, 2012 12:	14:27 PM			
Туре	string				
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false	false			
Read Only	false	false			
Leaf	false				

public exec_position : int					
Documentation	Execution position in	Execution position in the pipeline.			
Author	ismael				
Create Date Time	Sep 18, 2012 1:27:52 AM				
Last Modified	Oct 6, 2012 12:14:27 PM				
Initial Value	0				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public processor_idx : in	t				
Author	ismael				
Create Date Time	Sep 24, 2012	12:09:06 PM			
Last Modified	Oct 6, 2012 1	2:14:27 PM			
Initial Value	0				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false	false			
Read Only	false	false			
Leaf	false				

private handle : void				
Author	ismael			
Create Date Time	Oct 2, 2012 10:	11:38 AM		
Last Modified	Oct 2, 2012 10:	21:51 AM		
Type Modifier	*			
Туре	o void	o void		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false		_	
Leaf	false		· · ·	

public run_point : fncPtr					
Author	ismael				
Create Date Time	Oct 3, 2012 11:50:23 AM	,			
Last Modified	Oct 6, 2012 12:14:27 PM				
Туре	fncPtr				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public abort_point : fncP	tr				
Author	ismael	,			
Create Date Time	Oct 3, 2012 9:	08:23 PM			
Last Modified	Oct 6, 2012 12	2:14:27 PM			
Type Modifier	*				
Туре	fncPtr				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false	false			
Read Only	false				
Leaf	false				

public runnable : boolean				
Author	ismael			
Create Date Time	Oct 3, 2012 9:33:02 PM	_		
Last Modified	Oct 3, 2012 9:40:37 PM			
Туре	boolean			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public finish_callback : fn	cPtr				
Author	ismael				
Create Date Time	Oct 4, 2012 1	:28:56 AM			
Last Modified	Oct 6, 2012 1	2:14:27 PM			
Type Modifier	*				
Туре	fncPtr				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false	false			
Read Only	false	false			
Leaf	false				

public finish_code : int					
Author	ismael				
Create Date Time	Oct 4, 2012 1:30:40 AM				
Last Modified	Oct 6, 2012 12:14:27 PM				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public module : module			
Author	ismael		
Create Date Time	Oct 4, 2012 1:34:46 AM	_	
Last Modified	Oct 4, 2012 1:36:10 AM		
Туре	module		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false	-	
Multiplicity	Unspecified	_	
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public error_msg : string			
Author	ismael		
Create Date Time	Oct 4, 2012 9:12:10 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Туре	string		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public launch ()	
Static	false
Leaf	false
Documentation	Loads the library into memory and prepares its execution. 1) If pid>0, the slot is already in use, return error 2) Generate a new pid 3) handle=dlopen(binary_path, RTDL_NOW); to dynamically load the shared library. 4) run_point=dlsym(handle, _run_cycle); 5) start_point=dlsym(handle, _abort); 6) save pointer to allocated pipeline: self->pipeline=hwapi->pipelines[self->processor_idx];
Author	ismael
Create Date Time	Sep 17, 2012 1:01:44 AM
Last Modified	Oct 6, 2012 3:39:38 PM
Ordered	false
Unique	true
Query	false

public remove ()	
Static	false
Leaf	false
Documentation	 Call hwapi_pipeline_remove(self->pipeline,self); Call to dlclose(handle) Set pid=0 if finishCallback!=null, call the function
Author	ismael
Create Date Time	Sep 17, 2012 1:06:53 AM
Last Modified	Oct 6, 2012 3:39:19 PM

Ordered	false
Unique	true
Query	false

public pid ()	
Static	false
Leaf	false
Documentation	Returns the process id.
Author	ismael
Create Date Time	Sep 24, 2012 11:43:33 AM
Last Modified	Oct 5, 2012 2:11:57 PM
Ordered	false
Unique	true
Query	false

public run ()	
Static	false
Leaf	false
Documentation	Adds the process to the pipeline queue of the corresponding pipeline object, that is hwapi_pipeline_add(self->pipeline,self)
Author	ismael
Create Date Time	Oct 3, 2012 11:44:41 AM
Last Modified	Oct 6, 2012 3:39:19 PM
Ordered	false
Unique	true
Query	false

Unnamed Association		
To (+swapi_context)	Name	Value
	End Model Element	swapi
	Author	ismael
	Create Date Time	Oct 7, 2012 2:03:04 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 7, 2012 2:03:04 PM	
Last Modified	Oct 7, 2012 2:05:46 PM	
Derived	false	

Unnamed Association		
From	Name	Value
	End Model Element	module
	Author	ismael
	Create Date Time	Oct 4, 2012 9:26:18 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 4, 2012 9:26:18 AM	
Last Modified	Oct 7, 2012 2:05:46 PM	
Derived	false	

Unnamed Association			
From	Name	Value	
	End Model Element	hwapi	
	Author	ismael	
	Create Date Time	Oct 6, 2012 10:49:40 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	Aggregation	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false	false	
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 6, 2012 10:49:40 AM		
Last Modified	Oct 7, 2012 7:37:26 PM		
Derived	false		

Unnamed Association		
From (pipeline)	Name	Value
	End Model Element	hwapi_pipeline
	Author	ismael
	Create Date Time	Oct 6, 2012 2:49:57 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	public
	Aggregation Kind	Composited
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 2:49:57 PM	
Last Modified	Oct 7, 2012 2:05:46 PM	
Derived	false	

UHD

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Implementation of the DAC interface to the Universal Hardware Driver (UHD) for USRP family of devices.
Author	ismael
Create Date Time	Oct 1, 2012 1:23:04 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Unnamed Generalization	
From	hwapi_dac
Author	ismael
Create Date Time	Oct 1, 2012 1:23:18 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Substitutable	false
Visibility	Unspecified

module

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	Stores the attributes of waveform module.
Author	ismael
Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 8:25:24 PM

public id : int				
Documentation	•	Unique number (in the waveform) generated automatically in the constructor.		
Author	ismael			
Create Date Time	Sep 12, 2012	1:50:47 AM		
Last Modified	Sep 21, 2012	Sep 21, 2012 12:15:33 AM		
Туре	int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public name : string				
Author	ismael			
Create Date Time	Sep 12, 2012	1:50:47 AM		
Last Modified	Sep 17, 2012	5:48:10 PM		
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public binary : string			
Documentation	name of the binary, not the full path. Depending on the platform it can be a stand-alone executable (program) or a library which is dynamically loaded.		
Author	ismael		
Create Date Time	Sep 12, 2012	1:50:47 AM	
Last Modified	Sep 21, 2012 12:15:33 AM		
Туре	string		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public c_mopts : float				
Documentation	Module proc	Module processing requirements in MOPTS		
Author	ismael			
Create Date Time	Sep 12, 2012 1	:50:47 AM		
Last Modified	Sep 21, 2012 1	Sep 21, 2012 12:15:33 AM		
Туре	float	float		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			

Derived Union	false
Read Only	false
Leaf	false

public processor_idx : int			
Documentation	Processor id where the module has been mapped.		
Author	ismael		
Create Date Time	Sep 24, 2012 12:08:33 PM	M	
Last Modified	Oct 5, 2012 1:57:36 PM		
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public status : int				
Author	ismael			
Create Date Time	Oct 2, 2012 11:55:35 AM			
Last Modified	Oct 2, 2012 12:02:48 PM			
Туре	int int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public nof_reporting_vars : int				
Author	ismael			
Create Date Time	Oct 3, 2012 12:59:14 PM			
Last Modified	Oct 3, 2012 1:03:08 PM			
Туре	int int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false		_	

public serialize (pkt : packet)			
Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 13, 2012 11:03:03 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	acket packet	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Call moduleObj.execInfo	·	
Author	ismael		
Create Date Time	Sep 13, 2012 10:30:12 PM		
Last Modified	Oct 7, 2012 8:25:24 PM		
Ordered	false		
Unique	true		
Query	false		

public unserializeTo (pkt : packet, dest : serializable)

Parameters	pkt		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	packet	
	Direction	inout	
	dest		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 14, 2012 1:50:19 PM	
	Last Modified	Oct 5, 2012 1:47:35 PM	
	Туре	serializable	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	for all variables (see	nd call /ariables[i].unserializeTo(moduleObj.module\ e moduleVariables.length) ıleObj.itfs[i].serializeTo() for all nof_itfs	√ariables[i])
Author	ismael		
Create Date Time	Sep 14, 2012 1:49:55 PI	M	
Last Modified	Sep 24, 2012 1:23:55 Pf	M	
Ordered	false		
Unique	true		

false

Query

Unnamed Association					
To (module)	Name	Value			
	End Model Element	hwapi_process			
	Author	ismael			
	Create Date Time	Oct 4, 2012 9:26:18 AM			
	Provide Property Getter Method	false			
	Provide Property Setter Method	false			
	Multiplicity	1			
	Visibility	public			
	Aggregation Kind	None			
	Navigable	true			
	Derived	false			
	Derived Union	false			
	Read Only	false			
	Static	false			
	Leaf	false			
Abstract	false				
Leaf	false	false			
Visibility	Unspecified	Unspecified			
Author	ismael	ismael			
Create Date Time	Oct 4, 2012 9:26:18 AM				
Last Modified	Oct 7, 2012 2:05:46 PM	Oct 7, 2012 2:05:46 PM			
Derived	false				



Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 1, 2012 1:23:11 PM
Last Modified	Oct 6, 2012 12:14:27 PM

Unnamed Generalization	Unnamed Generalization			
From	hwapi_dac			
Author	ismael			
Create Date Time	Oct 1, 2012 1:23:21 PM			
Last Modified	Oct 6, 2012 12:14:27 PM			
Substitutable	false			
Visibility	Unspecified			

hwapi_itf_physic

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	In linux, physical interfaces are TCP/IP Ethernet interfaces. They inherit from the Interface abstract class. Supported protocols are TCP and UDP. Modes can be IN, which creates an input socket and accepts the connection in TCP; or OUT, which creates the output socket.
Author	ismael
Create Date Time	Sep 17, 2012 1:01:01 AM
Last Modified	Oct 6, 2012 12:35:11 PM

private sock_fd : int				
Author	ismael			
Create Date Time	Sep 26, 2012 10:56	6:17 AM		
Last Modified	Oct 5, 2012 2:20:03	3 PM		
Туре	o int			
Allow Empty Name	false	false		
Getter	false	Setter		false
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false			
Read Only	false			
Leaf	false	·		

private conn_fd : int						
Author	ismael					
Create Date Time	Sep 26, 2012	11:02:34 AI	М			
Last Modified	Oct 5, 2012 2	:20:03 PM				
Туре	o int					
Allow Empty Name	false					
Getter	false		Setter		false	
Derived	false					
Multiplicity	Unspecified	Unspecified				
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false	·				

private is_tcp : boolean					
Author	ismael				
Create Date Time	Sep 26, 2012 11:25:18 /	AM			
Last Modified	Oct 5, 2012 2:20:03 PM				
Туре	boolean				
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false	false			
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

private sock_addr : sockaddr				
Author	ismael			
Create Date Time	Sep 26, 2012 11:26:48 A	М		
Last Modified	Oct 5, 2012 2:20:03 PM			
Туре	sockaddr			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public name : string						
Author	ismael					
Create Date Time	Sep 30, 2012	11:03:39 A	М			
Last Modified	Sep 30, 2012	11:10:06 A	М			
Туре	string					
Allow Empty Name	false					
Getter	false		Setter		false	
Derived	false		-			
Multiplicity	Unspecified	Unspecified				
Aggregation	None	None				
Derived Union	false					
Read Only	false					
Leaf	false					

private connected : boolean				
Author	ismael			
Create Date Time	Oct 1, 2012 11:37:44 AM			
Last Modified	Oct 1, 2012 11:39:20 AM			
Туре	boolean			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public id : int					
Author	ismael				
Create Date Time	Oct 2, 2012 12	::19:05 PM			
Last Modified	Oct 2, 2012 12	::27:12 PM			
Туре	o int				
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false	false			
Multiplicity	Unspecified				
Aggregation	None	None			
Derived Union	false				
Read Only	false				
Leaf	false				

public create (address : string)				
Parameters	address			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 26, 2012 11:23:58 AM		
	Last Modified	Sep 26, 2012 11:33:55 AM		
	Туре	string		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Creates and connects the interface. The +name and +mode attributes *MUST* be filled before calling to this method. Address format is: "proto://ip_address:port" where proto is "tcp" or "udp".			
Author	ismael			
Create Date Time	Sep 14, 2012 1:06:27 PM			
Last Modified	Sep 26, 2012 11:33:55 AM			
Ordered	false			
Unique	true			
Query	false			

public connect ()		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 27, 2012 2:48:21 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public disconnect ()	
Static	false
Leaf	false
Documentation	If mode=out: 1) call shutdown() 2) read until error connection closed 3) close fd (not socket) 4) set connected=false If mode=in 1) read until error connection closed 2) close fd (not socket) 3) set connected=false

Author	ismael
Create Date Time	Oct 1, 2012 11:30:43 AM
Last Modified	Oct 5, 2012 2:20:03 PM
Ordered	false
Unique	true
Query	false

public remove ()		
Static	false	
Leaf	false	
Documentation	Close the interfaces and clears resources	
Author	ismael	
Create Date Time	Sep 17, 2012 1:07:33 AM	
Last Modified	Sep 26, 2012 11:43:55 AM	
Ordered	false	
Unique	true	
Query	false	

public recv (buffer : void, len : int)				
Parameters	buffer	buffer		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 1:08:19 AM		
	Last Modified	Sep 26, 2012 11:43:55 AM		
	Type Modifier	*		
	Туре	o void		
	Direction	inout		
	Lea			
	len			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 1:08:19 AM		
	Last Modified	Sep 26, 2012 11:43:55 AM		
	Туре	int int		
	Direction	inout		
Static	false			
Leaf	false			
Author	ismael			
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM		
Last Modified	Sep 26, 2012 11:43:55 A	Sep 26, 2012 11:43:55 AM		
Ordered	false	false		
Unique	true	true		
Query	false	false		

public send (buffer : voice	d, len : int)		
Parameters	buffer		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 1:08:16 AM	
	Last Modified	Sep 26, 2012 11:43:55 AM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	len		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 1:08:16 AM	
	Last Modified	Sep 26, 2012 11:43:55 AM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 12, 2012 1:50:47 AM	Sep 12, 2012 1:50:47 AM	
Last Modified	Sep 26, 2012 11:43:55 A	Sep 26, 2012 11:43:55 AM	
Ordered	false	false	
Unique	true	true	
Query	false	false	

public set_blocking (block : boolean)			
Parameters	block		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 26, 2012 11:40:23 AM	
	Last Modified	Sep 26, 2012 11:43:55 AM	
	Туре	boolean	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 26, 2012 11:40:10 AM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false		
Unique	true		
Query	false		

public get_blocking () : boolean		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 26, 2012 11:40:23 AM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public request_ptr (size : int) : void		
Parameters	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:34:46 PM
	Last Modified	Oct 2, 2012 1:21:13 PM
	Туре	o int
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 17, 2012 7:34:36 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Type Modifier	*	
Ordered	false	
Unique	true	
Query	false	

public release_ptr (ptr : void)		
Parameters	ptr	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 24, 2012 12:01:02 PM
	Last Modified	Oct 2, 2012 1:21:13 PM
	Type Modifier	*
	Туре	o void
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 24, 2012 12:00:05 PM	
Last Modified	Oct 5, 2012 2:20:03 PM	
Ordered	false	
Unique	true	
Query	false	

public put_ptr (ptr : void)			
Parameters	ptr		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 24, 2012 12:01:02 PM	
	Last Modified	Oct 2, 2012 1:21:13 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Sep 24, 2012 12:00:05 PM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false		
Unique	true		
Query	false		

public set_callback (fnc : fncPtr, prio : int)

Parameters	fnc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 18, 2012 10:18:31 AM	
	Last Modified	Oct 4, 2012 10:01:36 AM	
	Type Modifier	*	
	Туре	fncPtr	
	Direction	inout	
	prio		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 4, 2012 9:57:17 AM	
	Last Modified	Oct 4, 2012 10:01:36 AM	
	Туре	int int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Adds a callback handler to the interface with priority prio. This function creates a thread with priority prio which blocks at recv infinitely. When the packet is received, fnc() is called. Note that the behavior in unspecified if another thread calls and a packet arrives. If the handler pointer is zero, the handler is removed.		
Author	ismael		
Create Date Time	Sep 18, 2012 10:16:28 AM		
Last Modified	Oct 5, 2012 2:20:03 PM		
Ordered	false		
Unique	true		
Query	false		

Unnamed Generalization		
From	hwapi_itf	
Author	ismael	
Create Date Time	Sep 18, 2012 9:48:09 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	
Substitutable	false	
Visibility	Unspecified	

Unnamed Association				
From	Name	Value		
	End Model Element	hwapi		
	Author	ismael		
	Create Date Time	Oct 6, 2012 10:49:30 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 6, 2012 10:49:30 AM	Oct 6, 2012 10:49:30 AM		
Last Modified	Oct 7, 2012 7:37:26 PM	Oct 7, 2012 7:37:26 PM		
Derived	false	false		

■ hwapi_pipeline

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A ProcThread is a POSIX-thread that runs in a single processor core with real-time priority and FIFO-scheduling (non-preemptable). It has a queue of function pointers which are called one after another. This functions are supposed to run SP tasks. The thread is synchronized with the kernel-thread with a shared memory POSIX semaphore. At the beginning of the timeslot, the kernel-thread actives a semaphore indicating the Proc-

	Thread may start its execution. After all functions are called, the Proc-Thread blocks on the semaphore again.
	These threads are detachable.
Author	ismael
Create Date Time	Sep 24, 2012 2:05:17 PM
Last Modified	Oct 6, 2012 3:39:19 PM

public semaphore : semaphore				
Documentation	Semaphore timer	Semaphore to synchronize the execution with the kernel-thread timer		
Author	ismael			
Create Date Time	Sep 24, 2012 2	2:06:00 PM		
Last Modified	Oct 4, 2012 10):37:27 AM		
Туре	semaphore			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None	None		
Derived Union	false			
Read Only	false			
Leaf	false			

private nof_modules : int			
Author	ismael		
Create Date Time	Sep 24, 2012 2:05:42 PM	1	
Last Modified	Sep 25, 2012 9:10:42 AM	1	
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		_

public finished : boolean	
Documentation	Indicates if the thread has finished the execution of a time-slot or not.
Author	ismael

Create Date Time	Sep 24, 2012 2:06:14 PM			
Last Modified	Sep 25, 2012 9	Sep 25, 2012 9:10:42 AM		
Туре	boolean		,	
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	,	`	
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public running_process : hwapi_process				
Documentation	Indicates the	Indicates the execution position of the running module		
Author	ismael			
Create Date Time	Sep 25, 2012	9:38:44 AM		
Last Modified	Oct 6, 2012 3:	29:18 PM		
Туре	hwapi_pro	hwapi_process		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false	false		
Leaf	false	false		

public thread : pthread			
Author	ismael		
Create Date Time	Sep 25, 2012 10:26:07 AM	М	
Last Modified	Oct 3, 2012 9:08:37 PM		
Туре	pthread		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public sig_masked : int

Documentation	To improve the coexistence between threads and signals, each thread is assigned one of the			
Author	ismael			
Create Date Time	Oct 3, 2012 9:4	49:01 PM		
Last Modified	Oct 5, 2012 2:	11:57 PM		
Туре	o int	int int		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

-	
public run_thread ()	
Static	false
Leaf	false
Documentation	Runs one process after another (calling process[i].run_point()) and then sleeps waiting for the semaphore
Author	ismael
Create Date Time	Sep 24, 2012 2:04:37 PM
Last Modified	Oct 6, 2012 3:29:18 PM
Ordered	false
Unique	true
Query	false

public recover_thread (process : hwapi_process, removeProcess : boolean)

Parameters	process		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 6, 2012 3:32:39 PM	
	Last Modified	Oct 6, 2012 3:39:19 PM	
	Туре	hwapi_process	
	Direction	inout	
	removeProcess Multiplicity		
	Multiplicity Author	Unspecified	
	Create Date Time	Oct 4, 2012 1:21:04 AM	
	Last Modified	Oct 4, 2012 1:21:04 AW	
		boolean	
	Type Direction		
Static	<u> </u>	inout	
	false		
Leaf Documentation	false This function is called by the kernel or signal threads (despite)		
	This function is called by the kernel or signal threads (despite it is in ProcThread class). It is used to restore the thread		
		or occurred in a module (e.g. real-	
		prevents the running process from thread associated to the ProcThread	
	object and kills the thread		
Author	ismael		
Create Date Time	Oct 4, 2012 12:53:49 AM		
Last Modified	Oct 6, 2012 3:39:19 PM		
Ordered	false		
Unique	true		
Query	false		

public add (process : hwapi_process)			
Parameters	process		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time Sep 25, 2012 9:17:30 AM		
	Last Modified	Oct 6, 2012 3:29:18 PM	
	Туре	hwapi_process	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Adds the object process to the position process.exec_position		
Author	ismael		
Create Date Time	Sep 25, 2012 9:17:08 AM		

Last Modified	Oct 6, 2012 3:29:18 PM
Ordered	false
Unique	true
Query	false

public remove (proc : hwapi_process)			
Parameters	proc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 25, 2012 9:17:39 AM	
	Last Modified	Oct 3, 2012 9:40:37 PM	
	Туре	hwapi_process	
	Direction	inout	
Static	false	false	
Leaf	false		
Documentation	Removes the proces	Removes the process passed as a parameter	
Author	ismael	ismael	
Create Date Time	Sep 25, 2012 9:17:30 AM	Sep 25, 2012 9:17:30 AM	
Last Modified	Oct 5, 2012 2:11:57 PM		
Ordered	false	false	
Unique	true		
Query	false		

public sigsegv_handler ()		
Static	false	
Leaf	false	
Documentation	Handler for (SIGSEGV,SIGILL,SIGFPE,SIGBUS) signals. sigqueue a SIGRTMIN+1,SIGRTMIN+2,SIGRTMIN +3,SIGRTMIN+4 (respectively) with value.si_ptr=&this, set this.thread=NULL and pthread_exit().	
	>finish_code=ProcessorErrorCode.SIGSEGV write to errorMsg string with at least the first function in the callstack (backtrace)	
Author	ismael	
Create Date Time	Oct 3, 2012 8:10:39 PM	
Last Modified	Oct 6, 2012 3:39:19 PM	
Ordered	false	
Unique	true	
Query	false	

Relationships			
Unnamed Association			
To (hwapi_process[])	Name	Value	
	End Model Element	hwapi_process	
	Author	ismael	
	Create Date Time	Oct 6, 2012 2:49:57 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	process_x_pipeline_MAX	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 6, 2012 2:49:57 PM		
Last Modified	Oct 7, 2012 2:05:46 PM		
Derived	false		

Unnamed Association				
From	Name	Value		
	End Model Element	hwapi		
	Author	ismael		
	Create Date Time	Oct 6, 2012 10:49:44 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified			
Author	ismael			
Create Date Time	Oct 6, 2012 10:49:44 AM	Oct 6, 2012 10:49:44 AM		
Last Modified	Oct 7, 2012 2:05:46 PM			
Derived	false			

l hwapi

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The Base HWAPI class abstracts the platform (OS) and hardware particularities, for instance: timers, shared memory, physical interfaces and process creation/scheduling.
	Only one instance of this class can be created on each node. This is created by the kernel-thread class at boot of every node or by the Manager process. The hwapi is in charge of controlling thread-local-storage. Therefore, there is no need to pass a pointer to the hwapi context to each function call. In linux, can

	be implemented using POSIX TLS orthread GCC. However, this is not strictly required since only one execution thread access thread-sensible functions at a time.	
Author	ismael	
Create Date Time	Sep 12, 2012 1:50:47 AM	
Last Modified	Oct 7, 2012 7:49:18 PM	

Attributes

private ts_begin_fnc : fncPtr				
Author	ismael			
Create Date Time	Oct 1, 2012 7:07:20 PM	Oct 1, 2012 7:07:20 PM		
Last Modified	Oct 7, 2012 2:05:46 PM			
Туре	fncPtr			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Operations

Operations				
public initialize_node (config_file : string, ts_begin_fnc : fncPtr)				
Parameters	config_file	config_file		
	Multiplicity	Unspecified		
	Documentation	Path to the configuration file (platform.conf)		
	Author	ismael		
	Create Date Time	Sep 24, 2012 11:13:20 AM		
	Last Modified	Oct 5, 2012 2:11:57 PM		
	Туре	string		
	Direction	inout		
	ts_begin_fnc	ts_begin_fnc		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 1, 2012 7:07:42 PM		
	Last Modified	Oct 5, 2012 2:11:57 PM		
	Туре	fncPtr		
	Direction	inout		
Static	false			
Leaf	false			

Documentation	Must be called before any other function.	
	1) Parse configuration file and fill +machine attributes 2) Create interfaces. Call -createNodeInterfaces() 3) Setup synchronization: 3.1) If I am the synchronization master, set machine.clockSource=CLOCKSRC_TIMER if source="timer" or machine.clockSource=CLOCKSRC_DAC if source="dac://*" 3.2) If I am an slave node, set machine.clockSource=CLOCKSRC_TIMER if continuous_mode=FALSE or machine.clockSource=CLOCKSRC_SYNC if continuous_mode=TRUE 3.3) Set machine.syncContinuous boolean if continuous_mode=TRUE 3.4) Set machine.syncMaster boolean if I am the synchronization master reference 3.5) Set machine.syncPeriod to the synchronization period 4) setup DAC (if my node has a DAC). For each DAC, create an instance of the DAC type and: 4.1) Call DAC.openDAC(address,options,null) if machine.clockSource!=CLOCKSRC_DAC 4.2) Call DAC.setScheduler(tsBeginFnc, machine.kernelPrio) if machine.clockSource==CLOCKSRC_DAC 5) create max_queues_x_node +queues and max_modules_x_node +procs objects ismael	
Author	ismael	
Create Date Time	Sep 18, 2012 1:20:56 AM	
Last Modified	Oct 5, 2012 2:11:57 PM	
Ordered	false	
Unique	true	
Query	false	

private start_node_interfaces ()		
Static	false	
Leaf	false	
Documentation	1) Physicltf.create("tcp://local_ip:ctrl_port") mode in name "ctrl" 2) Physicltf.create("udp://local_ip:sync_port") mode in name "sync" 3) Physicltf.create("udp://local_ip:probe_port") mode in name "probe" 4) If !multicast, Physicltf.create("udp://node_ip:sync_port") mode out name "slavesync%d" for each n in node list 5) If multicast, Physicltf.create("udp://MULTICAST_GROUP1:sync_port") mode out name "slavesync0" (only one output interface is created)	
Author	ismael	
Create Date Time	Sep 30, 2012 11:17:17 AM	
Last Modified	Oct 5, 2012 2:11:57 PM	

Ordered	false
Unique	true
Query	false

public periodic_add (fnc : fncPtr, period : int)				
Parameters	fnc	fnc		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 25, 2012 11:19:59 AM		
	Last Modified	Sep 25, 2012 11:24:42 AM		
	Type Modifier	*		
	Туре	fncPtr		
	Direction	inout		
	period	period		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 25, 2012 11:19:59 AM		
	Last Modified	Sep 25, 2012 11:24:42 AM		
	Туре	int int		
	Direction	inout		
Static	false	false		
Leaf	false			
Documentation	Adds a new periodic function handler to periodicCallbacks			
Author	ismael			
Create Date Time	Sep 25, 2012 11:19:38 AM			
Last Modified	Oct 6, 2012 12:14:27 PM			
Ordered	false	false		
Unique	true			
Query	false			

public periodic_remove (fnc : fncPtr)			
Parameters	fnc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 6, 2012 12:08:47 PM	
	Last Modified	Oct 6, 2012 12:14:27 PM	
	Type Modifier	*	
	Туре	fncPtr	
	Direction	inout	
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Oct 6, 2012 12:08:39 PM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Ordered	false		
Unique	true		
Query	false		

public itf_physic_get (name : string) : hwapi_itf_physic		
Parameters	name	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 25, 2012 11:42:50 AM
	Last Modified	Sep 25, 2012 11:44:43 AM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Sep 25, 2012 11:42:32 AM	
Last Modified	Oct 6, 2012 12:53:21 PM	
Ordered	false	
Unique	true	
Query	false	

public hwapi_dac_get (address : string) : hwapi_dac

Parameters	address	address	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 6, 2012 12:32:52 PM	
	Last Modified	Oct 6, 2012 12:35:11 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Returns a pointer to the hwapi_dac handler with the same name		
Author	ismael	ismael	
Create Date Time	Oct 6, 2012 12:32:44 PM		
Last Modified	Oct 6, 2012 12:53:21 PM		
Ordered	false	false	
Unique	true		
Query	false		

public itf_queue_new () : hwapi_itf_queue		
Static	false	
Leaf	false	
Documentation	Returns the first queue object instance	
Author	ismael	
Create Date Time	Oct 6, 2012 12:53:45 PM	
Last Modified	Oct 6, 2012 1:32:27 PM	
Ordered	false	
Unique	true	
Query	false	

public process_new () : hwapi_process		
Static	false	
Leaf	false	
Documentation	Returns the first empty process instance	
Author	ismael	
Create Date Time	Oct 6, 2012 12:53:56 PM	
Last Modified	Oct 6, 2012 1:32:27 PM	
Ordered	false	
Unique	true	
Query	false	

Unnamed Association			
To (physic_itfs)	Name	Value	
	End Model Element	hwapi_itf_physic	
	Author	ismael	
	Create Date Time	Oct 6, 2012 10:49:30 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	physic_itf_MAX	
	Visibility	private	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified	Unspecified	
Author	ismael		
Create Date Time	Oct 6, 2012 10:49:30 AM		
Last Modified	Oct 7, 2012 7:37:26 PM		
Derived	false		

Unnamed Association			
To (+machine)	Name	Value	
·	End Model Element	machine	
	Author	ismael	
	Create Date Time	Oct 6, 2012 10:49:32 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 6, 2012 10:49:32 AM	Oct 6, 2012 10:49:32 AM	
Last Modified	Oct 7, 2012 2:05:46 PM		
Derived	false		

Unnamed Association		
To (dacs)	Name	Value
	End Model Element	hwapi_dac
	Author	ismael
	Create Date Time	Oct 6, 2012 10:49:36 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	dac_MAX
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 10:49:36 AM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
To (processes)	Name	Value
	End Model Element	hwapi_process
	Author	ismael
	Create Date Time	Oct 6, 2012 10:49:40 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	process_MAX
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 10:49:40 AM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
To (pipelines)	Name	Value
	End Model Element	hwapi_pipeline
	Author	ismael
	Create Date Time	Oct 6, 2012 10:49:44 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	pipeline_MAX
	Visibility	public
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 10:49:44 AM	
Last Modified	Oct 7, 2012 2:05:46 PM	
Derived	false	

Unnamed Association		
To (periodic)	Name	Value
	End Model Element	hwapi_periodic
	Author	ismael
	Create Date Time	Oct 6, 2012 10:49:48 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	periodic_MAX
	Visibility	public
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 10:49:48 AM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
To (time)	Name	Value
	End Model Element	hwapi_time
	Author	ismael
	Create Date Time	Oct 6, 2012 12:00:50 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 12:00:50 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
To (error)	Name	Value
	End Model Element	hwapi_error
	Author	ismael
	Create Date Time	Oct 6, 2012 12:02:38 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 12:02:38 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
To (task)	Name	Value
	End Model Element	hwapi_task
	Author	ismael
	Create Date Time	Oct 6, 2012 12:11:20 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	1
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 12:11:20 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
To (queues)	Name	Value
	End Model Element	hwapi_itf_queue
	Author	ismael
	Create Date Time	Oct 6, 2012 12:16:29 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	itf_queue_MAX
	Visibility	private
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 12:16:29 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

Unnamed Association		
From	Name	Value
	End Model Element	hwapi_kernel
	Author	ismael
	Create Date Time	Oct 7, 2012 7:35:49 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 7, 2012 7:35:49 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	

lack hwapi_file

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A non-instantiable class (no attributes). Just a collection of functions associated to file management.
Author	ismael
Create Date Time	Oct 6, 2012 11:57:55 AM
Last Modified	Oct 6, 2012 3:01:00 PM

public file_open (name : string) : int			
Parameters	name		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:23:28 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Accesses the filesystem under the relative path machine.filesystem. Files are opened in r/w mode always. Returns the file descriptor		
Author	ismael		
Create Date Time	Oct 3, 2012 12:23:21 PM		
Last Modified	Oct 6, 2012 12:02:50 PM		
Ordered	false		
Unique	true		
Query	false		

public file_write (fd : int, buffer : void, size : int)

Parameters	fd		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:24:07 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Туре	int int	
	Direction	inout	
	buffer		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:24:07 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Type Modifier	* void	
	Type		
	Direction	inout	
	size		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:24:07 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Туре	int int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Writes buffer to file		
Author	ismael		
Create Date Time	Oct 3, 2012 12:23:28 PM		
Last Modified	Oct 6, 2012 12:02:50 PM		
Ordered	false		
Unique	true		
Query	false		

public file_read (fd : int, buffer : void, size : int)

Parameters	fd		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:24:18 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Туре	int int	
	Direction	inout	
	buffer		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:24:18 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	size		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:24:18 PM	
	Last Modified	Oct 3, 2012 12:25:20 PM	
	Туре	int int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	reads file and stores in buffer		
Author	ismael		
Create Date Time	Oct 3, 2012 12:24:12 PM		
Last Modified	Oct 6, 2012 12:02:50 PM		
Ordered	false		
Unique	true		
	1		

machine

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false

Documentation	Public structure configured at initialize() from the information read from platform.conf. Stores some properties of the local machine architecture.
Author	ismael
Create Date Time	Sep 17, 2012 5:51:58 PM
Last Modified	Oct 6, 2012 12:35:11 PM

public cpu_type : int				
Author	ismael			
Create Date Time	Sep 17, 2012 5:52:35 PM			
Last Modified	Oct 5, 2012 2:20:03 PM			
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false	-		
Read Only	false			
Leaf	false			

public mopts : float					
Author	ismael	ismael			
Create Date Time	Sep 17, 2012 5	:52:39 PM			
Last Modified	Sep 17, 2012 5	:55:08 PM			
Туре	float	o float			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false	· · · · ·			

public mbpts : float				
Author	ismael			
Create Date Time	Sep 17, 2012 5:52:44 PM			
Last Modified	Sep 17, 2012 5:55:08 PM			
Туре	float			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public name : string					
Author	ismael				
Create Date Time	Sep 17, 2012	5:52:47 PM			
Last Modified	Sep 17, 2012	5:55:08 PM			
Туре	string				
Allow Empty Name	false	false			
Getter	false		Setter		false
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public nof_processors : int					
Author	ismael				
Create Date Time	Sep 25, 2012 10:12:56 A	М			
Last Modified	Oct 1, 2012 1:09:29 PM				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public rt_fault_opts : int						
Author	ismael					
Create Date Time	Sep 25, 2012	Sep 25, 2012 10:16:56 AM				
Last Modified	Oct 5, 2012 2	:20:03 PM				
Туре	int					
Allow Empty Name	false					
Getter	false		Setter		false	
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public kernel_prio : int					
Author	ismael				
Create Date Time	Sep 25, 2012	Sep 25, 2012 10:30:52 AM			
Last Modified	Oct 5, 2012 2	:20:03 PM			
Туре	o int	int int			
Allow Empty Name	false				
Getter	false		Setter		false
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public pipeline_prio : int					
Author	ismael				
Create Date Time	Sep 25, 2012 10:30:55 Al	М			
Last Modified	Oct 5, 2012 2:20:03 PM				
Туре	o int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false	_			
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public sync_period : int						
Author	ismael					
Create Date Time	Sep 25, 2012	11:15:05 Al	М			
Last Modified	Oct 5, 2012 2	:20:03 PM				
Туре	int	int int				
Allow Empty Name	false					
Getter	false		Setter		false	
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public sync_continuous :	boolean				
Author	ismael				
Create Date Time	Sep 25, 2012	11:39:51 AM			
Last Modified	Oct 5, 2012 2:	20:03 PM			
Туре	boolean	boolean			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public slave_master : boolean					
Author	ismael	ismael			
Create Date Time	Sep 26, 2012	1:27:01 PM			
Last Modified	Oct 5, 2012 2:	20:03 PM			
Туре	boolean				
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified	Unspecified			
Aggregation	None	None			
Derived Union	false	false			
Read Only	false	false			
Leaf	false	false			

public max_waveforms : int				
Author	ismael			
Create Date Time	Oct 1, 2012 7:25:12 PM			
Last Modified	Oct 1, 2012 7:28:45 PM			
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public max_modules_x_waveform : int					
Author	ismael				
Create Date Time	Oct 1, 2012 7:25:17 PM				
Last Modified	Oct 1, 2012 7:28:45 PM				
Туре	int int				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public max_variables_x_module : int				
Author	ismael			
Create Date Time	Oct 1, 2012 7:25:20 P	M		
Last Modified	Oct 1, 2012 7:28:45 P	M		
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Unnamed Association				
From	Name	Value		
	End Model Element	hwapi		
	Author	ismael		
	Create Date Time	Oct 6, 2012 10:49:32 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael			
Create Date Time	Oct 6, 2012 10:49:32 AM	Oct 6, 2012 10:49:32 AM		
Last Modified	Oct 7, 2012 2:05:46 PM	Oct 7, 2012 2:05:46 PM		
Derived	false			

■ hwapi_error

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 6, 2012 10:58:54 AM
Last Modified	Oct 7, 2012 8:09:19 PM

public code : hwapi.swapi_error_codes					
Author	ismael	ismael			
Create Date Time	Oct 6, 2012 11:09:4	0 AM			
Last Modified	Oct 6, 2012 12:02:5	0 PM			
Туре	hwapi.swapi_error_c	codes			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false	false			
Multiplicity	Unspecified	Unspecified			
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public string () : char			
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Oct 6, 2012 11:09:53 AM		
Last Modified	Oct 7, 2012 8:09:19 PM		
Type Modifier	*		
Ordered	false		
Unique	true		
Query	false		

public code () : int			
Static	false		
Leaf	false		
Author	ismael		
Create Date Time	Oct 7, 2012 7:42:03 PM		
Last Modified	Oct 7, 2012 7:49:18 PM		
Ordered	false		
Unique	true		
Query	false		

Unnamed Association				
From	Name	Value		
	End Model Element	hwapi		
	Author	ismael		
	Create Date Time	Oct 6, 2012 12:02:38 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 6, 2012 12:02:38 PM	Oct 6, 2012 12:02:38 PM		
Last Modified	Oct 7, 2012 7:37:26 PM	Oct 7, 2012 7:37:26 PM		
Derived	false	false		

hwapi_periodic

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 25, 2012 11:16:34 AM
Last Modified	Oct 6, 2012 12:35:11 PM

public callback : fncPtr				
Author	ismael			
Create Date Time	Sep 25, 2012 11:16:47 AM	M		
Last Modified	Oct 6, 2012 12:14:27 PM			
Туре	fncPtr			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public period : int			
Author	ismael		
Create Date Time	Sep 25, 2012 11:17:02 A	М	
Last Modified	Sep 25, 2012 11:24:42 A	M	
Туре	int int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public counter : int				
Author	ismael			
Create Date Time	Sep 25, 2012	11:22:27 AM		
Last Modified	Sep 25, 2012	11:24:42 AM		
Туре	int int	int int		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Unnamed Association			
From	Name	Value	
	End Model Element	hwapi	
	Author	ismael	
	Create Date Time	Oct 6, 2012 10:49:48 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	Aggregation	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false	false	
Visibility	Unspecified	Unspecified	
Author	ismael		
Create Date Time	Oct 6, 2012 10:49:48 AM	Oct 6, 2012 10:49:48 AM	
Last Modified	Oct 7, 2012 7:37:26 PM	Oct 7, 2012 7:37:26 PM	
Derived	false		

≣ hwapi_shm

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A non-instantiable class (no attributes). Just a collection of functions associated to shared memory management.
Author	ismael
Create Date Time	Oct 6, 2012 11:57:22 AM
Last Modified	Oct 6, 2012 3:01:00 PM

public shm_open (name : string, size : int) : void				
Parameters	name	name		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:37:45 PM		
	Last Modified	Sep 18, 2012 1:36:44 AM		
	Туре	string		
	Direction	inout		
	size			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 1:03:32 AM		
	Last Modified	Sep 18, 2012 1:36:44 AM		
	Туре	int int		
	Direction	inout		
Static	false			
Leaf	false			
Documentation		Creates a shared memory area with a given name and size and returns the pointer to the start of the allocated area.		
	Use a simple library	to manage block-based memory pools.		
Author	ismael			
Create Date Time	Sep 17, 2012 1:02:17 AM	Sep 17, 2012 1:02:17 AM		
Last Modified	Oct 6, 2012 11:58:05 AM			
Type Modifier	*	*		
Ordered	false	false		
Unique	true	true		
Query	false	false		

public shm_close (ptr : void)		
Parameters	ptr	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 1:08:59 AM
	Last Modified	Sep 18, 2012 1:36:44 AM
	Type Modifier	*
	Туре	o void
	Direction	inout
Static	false	
Leaf	false	

Documentation	Releases the resources of the shared memory pointed by ptr. The memory can't be used after calling this function, and the behavior is unspecified (depends on OS) if done.
Author	ismael
Create Date Time	Sep 17, 2012 1:07:18 AM
Last Modified	Oct 6, 2012 11:58:05 AM
Ordered	false
Unique	true
Query	false

hwapi_kernel

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The HWAPI kernel schedules the execution of the ALOE-Node class and waveform modules in each platform's node. The main() is implemented in this class. When it starts, it creates the HWAPI-base class (which instantiates the rest of hwapi classes) and the ALOE-Node class (which processes commands from the manager). It initializes hardware devices and runs the main kernel timer. The execution timer, in Linux, can be driven from three different sources, chosen from the platform.conf file: 1) POSIX real-time timer 2) Synchronization packet, through a POSIX semaphore 3) Digital converter, through a POSIX semaphore
Author	ismael
Create Date Time	Sep 17, 2012 9:00:33 PM
Last Modified	Oct 7, 2012 7:37:26 PM

private resources_opened : boolean			
Author	ismael		
Create Date Time	Oct 4, 2012 10:30:28 AM		
Last Modified	Oct 5, 2012 2:11:57 PM		
Туре	boolean		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public main ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 24, 2012 10:28:24 AM
Last Modified	Sep 25, 2012 9:50:44 AM
Ordered	false
Unique	true
Query	false

private initialize ()	
Static	false
Leaf	false
Documentation	1) use shm_open("/initTime") and point hwapi.initTime to the shared memory. 2) create sleepSemaphore and all semaphores for all hwapi.procThreads 3) set resourcesCreated=TRUE 4) block all signals except (SIGSEGV,SIGILL,SIGFPE,SIGBUS). Add ProcThread.sigsegvHandler() to these signals. 5) call hwapi.initialize(configFile,tsBegins) 6) set self priority to hwapi.machine.kernelPrio 7) create timer, hwapi.tslot_sem and hwapi.dac_sem semaphores 8) set initTime to get_time andtimeslot to 0 9) Create the SignalThread 10) Create a detachable thread to run(), associate to processor index and priority hwapi.machine.threadPrio

Author	ismael
Create Date Time	Sep 17, 2012 9:01:51 PM
Last Modified	Oct 4, 2012 10:37:27 AM
Ordered	false
Unique	true
Query	false

public timer_thread ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Oct 5, 2012 2:04:09 PM
Last Modified	Oct 5, 2012 2:11:57 PM
Ordered	false
Unique	true
Query	false

public sigwait_thread ()		
Static	false	
Leaf	false	
Documentation	This is a thread with priority kernelPrio that synchronously waits for hwapi_pipeline signals (usign sigwaitinfo). All signals except thread-specific ones (SIGSEGV,SIGILL,SIGBUS,SIGFPE) are blocked by all threads except this one. Thread-specific signals are handled by ProcThreads which send a SIGRTMIN +1,SIGRTMIN+2,SIGRTMIN+3,SIGRTMIN+4 (respectively) to this thread, which takes actions accordingly. for signals SIGRTMIN to SIGRTMIN+4, cast the hwapi_pipeline object from this si_value pointer and call hwapi_pipeline_recover_thread(pipeline, pipeline->running_process, TRUE)	
Author	ismael	
Create Date Time	Oct 4, 2012 12:45:26 AM	
Last Modified	Oct 6, 2012 3:41:01 PM	
Ordered	false	
Unique	true	
Query	false	

private ts_begins ()	
Static	false
Leaf	false
Documentation	synchronizes the timeslot of the processor threads with the kernel thread and calls periodic functions. It also verifies real-time faults

Author	smael			
Create Date Time	p 17, 2012 9:01:53 PM			
Last Modified	ct 5, 2012 2:11:57 PM			
Ordered	false			
Unique	true			
Query	false			

private rt_fault (process : hwapi_process)				
Parameters	process	process		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 4, 2012 9:21:25 AM		
	Last Modified	Oct 6, 2012 3:39:19 PM		
	Туре	hwapi_process		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	A real-time fault has been detected. if hwapi.machine.rtFaultKill, calls procThread.restoreThread() to kill the runningModule and restore the execution. The process causing the real-time failure is removed from the ProcThread object and a new thread is created beginning the execution with the first element in the pipeline. Set errorCode=RTFAULT value in module's Process object. *NOTE* that meanwhile, the module may be already finished and the next module in the pipeline will still receive an RT-fault. Indeed, when there is an rt-fault it is a system-wide problem, despite identifying which module is causing it is always helpful.			
Author	ismael			
Create Date Time	Sep 25, 2012 9:48:54 AM	И		
Last Modified	Oct 6, 2012 3:29:18 PM			
Ordered	false	false		
Unique	true			
Query	false			

public cleanup ()	
Static	false
Leaf	false
Documentation	if resources opene 1) clear shared memory for init_time 2) clear procThread and sleep semaphores.
Author	ismael
Create Date Time	Oct 4, 2012 10:26:05 AM

Last Modified	Oct 4, 2012 10:37:27 AM
Ordered false	
Unique	true
Query	false

Unnamed Association				
To (hwapi)	Name	Value		
	End Model Element	hwapi		
	Author	ismael		
	Create Date Time	Oct 7, 2012 7:35:49 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	private		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 7, 2012 7:35:49 PM			
Last Modified	Oct 7, 2012 7:37:26 PM			
Derived	false			

hwapi_error_codes

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	enumeration
Author	ismael
Create Date Time	Oct 6, 2012 11:10:34 AM
Last Modified	Oct 7, 2012 1:58:35 PM

Attributes

public EINVAL				
Author	ismael			
Create Date Time	Oct 6, 2012 11:11:03 AM			
Last Modified	Oct 7, 2012 1:58:35 PM			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public ENOSPACE				
Author	ismael			
Create Date Time	Oct 6, 2012 11:11:57 AM			
Last Modified	Oct 7, 2012 1:58:35 PM			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public EEXISTS				
Author	ismael			
Create Date Time	Oct 6, 2012 11	:12:01 AM		
Last Modified	Oct 7, 2012 1:	Oct 7, 2012 1:58:35 PM		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false	false		
Leaf	false			

public ESYSTEM				
Author	ismael			
Create Date Time	Oct 6, 2012 11:12:20 AM			
Last Modified	Oct 7, 2012 1:58:35 PM			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public E2BIG				
Author	ismael			
Create Date Time	Oct 6, 2012 11:14:37 AM			
Last Modified	Oct 7, 2012 1:58:35 PM			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false	,		

public EOTHER				
Author	ismael	ismael		
Create Date Time	Oct 6, 2012 11	:15:08 AM		
Last Modified	Oct 7, 2012 1:	Oct 7, 2012 1:58:35 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

lack | la

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 6, 2012 11:58:40 AM
Last Modified	Oct 6, 2012 12:35:11 PM

Attributes

public init_time : time_t			
Documentation	Reference time to synchronize timer and indicate the beginning of time.		
Author	ismael		
Create Date Time	Sep 18, 2012 2:01:20 PM		
Last Modified	Oct 6, 2012 12:02:50 PM		
Type Modifier	*		
Туре	time_t		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		

Leaf	false
Loui	14.00

public init_time_is_shm : boolean					
Author	ismael				
Create Date Time	Oct 2, 2012 10:51:	11 AM			
Last Modified	Oct 6, 2012 12:02:	50 PM			
Туре	boolean				
Allow Empty Name	false	false			
Getter	false	false Setter false			
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false		· ·		
Leaf	false				

public ts_cnt : int				
Documentation	Time-slot num timer.	Time-slot number. Incremented every event of the kernel-thread timer.		
Author	ismael			
Create Date Time	Sep 18, 2012 2:0	1:36 PM		
Last Modified	Oct 6, 2012 12:14	Oct 6, 2012 12:14:27 PM		
Туре	o int	int int		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Operations

public set (time : time_t)				
Parameters	time			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 25, 2012 12:30:44 PM		
	Last Modified	Sep 25, 2012 12:34:46 PM		
	Type Modifier	&		
	Туре	time_t		
	Direction	inout		

Static	false
Leaf	false
Documentation	This function is called by syncSlave() in TWO-WAY synchronization mode. It adjusts the local time-slot timer. It has an effect only if clockSource==CLOCKSRC_TIMER
Author	ismael
Create Date Time	Sep 25, 2012 12:30:37 PM
Last Modified	Oct 6, 2012 12:02:50 PM
Ordered	false
Unique	true
Query	false

public get (time : time_t)				
Parameters	time			
	Multiplicity	Unspecified		
	Documentation	Pointer to the time_t structure.		
	Author	ismael		
	Create Date Time	Sep 24, 2012 10:46:43 AM		
	Last Modified	Sep 24, 2012 11:01:35 AM		
	Type Modifier	&		
	Туре	time_t		
	Direction	out		
Static	false			
Leaf	false			
Documentation	Stores the current time in the structure pointed by time pointer.			
Author	ismael			
Create Date Time	Sep 17, 2012 5:54:42 PM			
Last Modified	Oct 6, 2012 12:02:50 PM			
Ordered	false			
Unique	true			
Query	false			

public slot () : int	
Static	false
Leaf	false
Documentation	returns the time-slot number
Author	ismael
Create Date Time	Sep 18, 2012 2:01:03 PM
Last Modified	Oct 6, 2012 12:14:27 PM
Ordered	false
Unique	true
Query	false

public time_attach_local ()	
Static	false
Leaf	false
Documentation	Called by the manager if obtains the time from shared memory. 1) call shm_open("/initTime"); and save pointer to init_time. 2) set initTimeShm=TRUE
Author	ismael
Create Date Time	Oct 2, 2012 10:49:43 AM
Last Modified	Oct 6, 2012 12:14:27 PM
Ordered	false
Unique	true
Query	false

Relationships

Unnamed Association			
From	Name	Value	
	End Model Element	hwapi	
	Author	ismael	
	Create Date Time	Oct 6, 2012 12:00:50 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	Aggregation	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 6, 2012 12:00:50 PM		
Last Modified	Oct 7, 2012 7:37:26 PM		
Derived	false		

lhwapi_task

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 6, 2012 12:10:46 PM
Last Modified	Oct 6, 2012 12:35:11 PM

Attributes

public sleep_sem : semaphore			
Author	ismael		
Create Date Time	Oct 2, 2012 11:59:50 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Туре	semaphore		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Operations

public sleep (sleep_slots : int)			
Parameters	sleep_slots		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 2, 2012 11:59:39 AM	
	Last Modified	Oct 6, 2012 12:14:27 PM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	The calling thread is blocked until "tslot" timeslot. Only one thread can call this function at a time 1) If sleepTstamp>0, another thread is waiting, return ERR		

	2) set sleepTstamp=tslot;3) wait for semaphore4) on return, set sleepTstamp=0	
Author	ismael	
Create Date Time	Oct 2, 2012 11:59:29 AM	
Last Modified	Oct 6, 2012 12:14:27 PM	
Ordered	false	
Unique	true	
Query	false	

public new (fnc : fncPtr, arg : void)			
Parameters	fnc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:03:22 PM	
	Last Modified	Oct 3, 2012 12:03:28 PM	
	Туре	fncPtr	
	Direction	inout	
	arg		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:03:22 PM	
	Last Modified	Oct 3, 2012 12:03:28 PM	
	Type Modifier	*	
	Туре	void	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Creates a new thread with normal priority, that is, no real- time priority. The thread is detachable, meaning that runs the function pointed by the first parameter and then is destroyed, ignoring the returned value.		
Author	ismael		
Create Date Time	Oct 3, 2012 12:03:04 PM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Ordered	false		
Unique	true		
Query	false		

public new_prio (fnc : fncPtr, arg : void, prio : int, cpu : int)

Parameters	fnc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 4, 2012 10:33:57 AM	
	Last Modified	Oct 4, 2012 10:37:27 AM	
	Туре	fncPtr	
	Direction	inout	
	arg		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 4, 2012 10:33:57 AM	
	Last Modified	Oct 4, 2012 10:37:27 AM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	prio		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 4, 2012 10:33:57 AM	
	Last Modified	Oct 4, 2012 10:37:27 AM	
	Type	int	
	Direction	inout	
	Direction	Inout	
	cpu		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 4, 2012 10:33:57 AM	
	Last Modified	Oct 4, 2012 10:37:27 AM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	All threads are created with detachable state.		
Author	ismael		
Create Date Time	Oct 4, 2012 10:33:40 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Ordered	false		
Unique	true		
Query	false		
	1.5.55		

Relationships

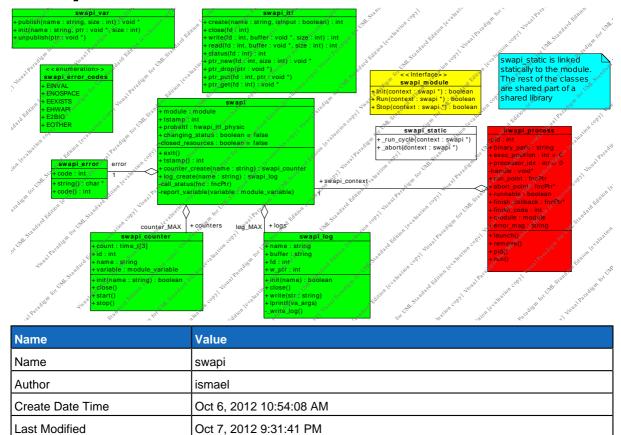
Unnamed Association		
From	Name	Value
	End Model Element	hwapi
	Author	ismael
	Create Date Time	Oct 6, 2012 12:11:20 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 12:11:20 PM	
Last Modified	Oct 7, 2012 7:37:26 PM	
Derived	false	



Name	Value
Author	ismael
Create Date Time	Oct 6, 2012 12:02:34 PM
Last Modified	Oct 6, 2012 12:04:30 PM

Class Diagram

swapi



Summary

Name	Documentation
swapi_var	A non-instantiable class (no attributes). Just a collection of functions associated to variable management.
swapi_itf	A non-instantiable class (no attributes). Just a collection of functions associated to interface management.
swapi_error_codes	
swapi_module	
swapi	This is the module's interface to ALOE. It provides functions for creation of interfaces, global variables, pre-initialized values, log files and time counters. See swapi_module class for information on how to define a module.
swapi_static	This class has to be linked statically with any ALOE waveform module.
hwapi_process	A HWAPI Process is defined as dynamically loaded shared library with two symbols that *MUST* be defined:startup(arg0,arg1): This function is called at load-time and is not subject to real-time constraintsrunCycle(): This function is called each time-slot and is subject to real-time constraints.

	It is used to load and execute signal processing waveform modules. The HWAPI.Process objects are instantiated by Base.initializeNode() function at boot. A call to create() loads the module into memory. A call to startup() calls the _startup() function and a call to places the _runCycle() function into the pipelined execution queue (see Proc-Thread class)
swapi_error	
swapi_counter	A Counter is a class used to count short periods of time in a timeslot execution cycle, for instance, to measure the execution time of some parts of the code. It is associated with a public variable the name passed to the create() function. After a call to Stop(), the number of microseconds elapsed since the previous call to Start() is saved in the variable.
swapi_log	A Log is a mechanism for the module to write text to a logfile without interrupting real-time processing. Successive calls to Log() or Write() functions store the string in a temporal buffer. At the end of the timeslot, a new thread with lower priority is created to write the contents a non-volatile media provided by the hwapi (e.g. a hard-drive or flash-rom). Note that it may happen that the contents are never written, in the case that the processor is 100% of its time running signal processing tasks.
■ N/A	swapi_static is linked statically to the module. The rest of the classes are shared part of a shared library

Details

≣ swapi_var

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A non-instantiable class (no attributes). Just a collection of functions associated to variable management.
Author	ismael
Create Date Time	Oct 6, 2012 10:59:27 AM
Last Modified	Oct 6, 2012 2:46:06 PM

Operations

public publish (name : string, size : int) : void

Parameters	name	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:47:07 PM
	Last Modified	Sep 17, 2012 7:48:35 PM
	Туре	string
	Direction	inout
	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:47:07 PM
	Last Modified	Sep 17, 2012 7:48:35 PM
	Туре	o int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Declares a module variable as "public". Then other modules or the manager can view and modify it.	
	1) Find if variable name exists in mymodule.variables, otherwise find an empty space and fill attributes 2) call hwapi.openShm() to create a shared memory area for the variable. Save pointer in the variable object found in previous step 3) If all ok, return the shared memory pointer, otherwise return null	
Author	ismael	
Create Date Time	Sep 17, 2012 7:46:17 PM	
Last Modified	Oct 6, 2012 11:18:04 AM	
Type Modifier	*	
Ordered	false	
Unique	true	
Query	false	

public init (name : string, ptr : void, size : int)

Parameters	name			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 2, 2012 1:02:29 PM		
	Last Modified	Oct 2, 2012 1:10:27 PM		
	Туре	string		
	Direction	inout		
	ptr			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:46:17 PM		
	Last Modified	Sep 17, 2012 7:48:35 PM		
	Type Modifier	*		
	Туре	o void		
	Direction	inout		
	size	size		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 2, 2012 1:02:29 PM		
	Last Modified	Oct 2, 2012 1:10:27 PM		
	Туре	int		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Sets the initialization ptr	value of a variable to the buffer pointed by		
	mymodule.variables 2) copy min(size,my	1) find a variable in mymodule.variables with mymodule.variables[i].name=name 2) copy min(size,mymodule.variables[i].size) bytes of mymodule.variables[i].initValue to ptr		
Author	ismael			
Create Date Time	Sep 17, 2012 7:45:45 PM	Л		
Last Modified	Oct 6, 2012 11:28:04 AM	l		
Ordered	false			
Unique	true	true		
Query	false			

Parameters	ptr		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:47:43 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
Static	false	false	
Leaf	false		
Documentation	Declares a public variable "private" so that any ot the manager can modify it		
	mymodule.variables 2) clear mymodule.v	 Find a variable in mymodule.variables with mymodule.variables[i].shmPtr=ptr clear mymodule.variables[i] attributes call hwapi.closeShm(ptr); 	
Author	ismael		
Create Date Time	Sep 17, 2012 7:47:29 PM		
Last Modified	Oct 6, 2012 11:18:04 AM		
Ordered	false	false	
Unique	true		
Query	false		

swapi_itf

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A non-instantiable class (no attributes). Just a collection of functions associated to interface management.
Author	ismael
Create Date Time	Oct 6, 2012 10:56:28 AM
Last Modified	Oct 6, 2012 2:46:06 PM

Operations

public create (name : string, isInput : boolean) : int

Parameters	name			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:44:38 PM		
	Last Modified	Sep 17, 2012 7:48:35 PM		
	Туре	string		
	Direction	inout		
	isInput	isInput		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:44:38 PM		
	Last Modified	Sep 17, 2012 7:48:35 PM		
	Туре	boolean		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	an object of the clas HWAPI.Queue is created as the second of the class and the class	Creates an logical module interfaces. If the interface is extenal, an object of the class HWAPI.PhysicItf is created, otherwise HWAPI.Queue is created. 1) Find interface name in mymodule.interfaces. The mymodule.interfaces[i].id will be returned as the file descriptor if		
Author	ismael	ismael		
Create Date Time	Sep 17, 2012 7:44:17 PM	Sep 17, 2012 7:44:17 PM		
Last Modified	Oct 6, 2012 11:18:04 AM	1		
Ordered	false			
Unique	true	true		
Query	false	false		

Parameters	fd	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:47:29 PM
	Last Modified	Sep 17, 2012 7:48:35 PM
	Туре	int int
	Direction	inout
Static	false	
Leaf	false	
Documentation	Closes the interface and frees activeInterfaces. Only internal writer interfaces have to call removeltf	
Author	ismael	
Create Date Time	Sep 17, 2012 7:47:21 PM	
Last Modified	Oct 6, 2012 11:18:04 AM	
Ordered	false	
Unique	true	
Query	false	

public write (fd : int, buffer : void, size : int) : int

Parameters	fd		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:45:10 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Туре	int int	
	Direction	inout	
	buffer		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:45:10 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	size		
	Multiplicity	Unspecified	
	A cathe a m	. ,	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:45:10 PM	
	Create Date Time	Sep 17, 2012 7:45:10 PM	
	Create Date Time Last Modified	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM	
Static	Create Date Time Last Modified Type	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int	
Static Leaf	Create Date Time Last Modified Type Direction	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int	
	Create Date Time Last Modified Type Direction false false	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int	
Leaf	Create Date Time Last Modified Type Direction false false	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int inout	
Leaf Documentation	Create Date Time Last Modified Type Direction false false call activeInterface[fd].se	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int inout	
Leaf Documentation Author	Create Date Time Last Modified Type Direction false false call activeInterface[fd].se ismael	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int inout	
Leaf Documentation Author Create Date Time	Create Date Time Last Modified Type Direction false false call activeInterface[fd].se ismael Sep 17, 2012 7:44:38 PM	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int inout	
Leaf Documentation Author Create Date Time Last Modified	Create Date Time Last Modified Type Direction false false call activeInterface[fd].se ismael Sep 17, 2012 7:44:38 PM Oct 6, 2012 11:18:04 AM	Sep 17, 2012 7:45:10 PM Sep 17, 2012 7:48:35 PM int inout	

public read (fd : int, buffer : void, size : int) : int

Parameters	fd		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:45:28 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Туре	o int	
	Direction	inout	
	buffer	l	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:45:28 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Type Modifier	*	
	Туре	o void	
	Direction	inout	
	size		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:45:28 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Туре	o int	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	call activeInterface[fd].red	cv() with same arguments.	
Author	ismael		
Create Date Time	Sep 17, 2012 7:45:10 PM		
Last Modified	Oct 6, 2012 11:18:04 AM false		
Ordered			
Unique	true		
Query	false		

public status (fd : int) : int		
Parameters	fd	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:45:40 PM
	Last Modified	Sep 17, 2012 7:48:35 PM
	Туре	o int
	Direction	inout

Static	false
Leaf	false
Documentation	returns the number of bytes in the queue
Author	ismael
Create Date Time	Sep 17, 2012 7:45:31 PM
Last Modified	Oct 6, 2012 11:28:04 AM
Ordered	false
Unique	true
Query	false

public ptr_new (fd : int, size : int) : void		
Parameters	fd	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:50:11 PM
	Last Modified	Sep 17, 2012 7:52:29 PM
	Туре	o int
	Direction	inout
	size	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 17, 2012 7:50:11 PM
	Last Modified	Sep 17, 2012 7:52:29 PM
	Туре	int int
	Direction	inout
Static	false	
Leaf	false	
Documentation	call activeInterface[fd].red	questPtr() with same arguments.
Author	ismael	
Create Date Time	Sep 17, 2012 7:49:39 PM	
Last Modified	Oct 6, 2012 11:18:04 AM	
Type Modifier	*	
Ordered	false	
Unique	true	
Query	false	

public ptr_drop (ptr : void)

Parameters	ptr	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 2, 2012 12:34:11 PM
	Last Modified	Oct 2, 2012 12:41:11 PM
	Type Modifier	*
	Туре	o void
	Direction	inout
Static	false	
Leaf	false	
Documentation	call activeInterface[fd].releasePtr() with same arguments.	
Author	ismael	
Create Date Time	Oct 2, 2012 12:34:01 PM	
Last Modified	Oct 6, 2012 11:18:04 AM	
Ordered	false	
Unique	true	
Query	false	

public ptr_put (fd : int, ptr	: void)			
Parameters	fd	fd		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:51:50 PM		
	Last Modified	Sep 17, 2012 7:52:29 PM		
	Туре	o int		
	Direction	inout		
	ptr			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:52:06 PM		
	Last Modified	Sep 17, 2012 7:52:29 PM		
	Type Modifier	*		
	Туре	o void		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	call activeInterface[fd].putPtr() with same arguments.			
Author	ismael			
Create Date Time	Sep 17, 2012 7:51:41 PM			
Last Modified	Oct 6, 2012 11:18:04 AM			
Ordered	false			

Unique	true
Query	false

public ptr_get (fd : int) : void				
Parameters	fd	fd		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Sep 17, 2012 7:52:18 PM		
	Last Modified	Sep 17, 2012 7:52:29 PM		
	Туре	int int		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation	call activeInterface[f	call activeInterface[fd].getPtr() with same arguments.		
Author	ismael	ismael		
Create Date Time	Sep 17, 2012 7:52:07 PM	Sep 17, 2012 7:52:07 PM		
Last Modified	Oct 6, 2012 11:18:04 AM	Oct 6, 2012 11:18:04 AM		
Type Modifier	*	*		
Ordered	false	false		
Unique	true	true		
Query	false			

swapi_error_codes

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	enumeration
Author	ismael
Create Date Time	Oct 7, 2012 1:49:14 PM
Last Modified	Oct 7, 2012 1:58:35 PM

Attributes

public EINVAL				
Author	ismael			
Create Date Time	Oct 7, 2012 1:	49:43 PM		
Last Modified	Oct 7, 2012 1:	58:35 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public ENOSPACE				
Author	ismael			
Create Date Time	Oct 7, 2012 1:4	19:46 PM		
Last Modified	Oct 7, 2012 1:5	58:35 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public EEXISTS			
Author	ismael		
Create Date Time	Oct 7, 2012 1:49:48 PM		
Last Modified	Oct 7, 2012 1:58:35 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public EHWAPI				
Author	ismael			
Create Date Time	Oct 7, 2012 1:4	49:50 PM		
Last Modified	Oct 7, 2012 1:	58:35 PM		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			·
Leaf	false			

public E2BIG			
Author	ismael		
Create Date Time	Oct 7, 2012 1:49:52 PM		
Last Modified	Oct 7, 2012 1:58:35 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public EOTHER			
Author	ismael		
Create Date Time	Oct 7, 2012 1:49:55 PM		
Last Modified	Oct 7, 2012 1:58:35 PM		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false	,	

swapi_module

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	Interface
Author	ismael
Create Date Time	Oct 7, 2012 1:53:43 PM
Last Modified	Oct 7, 2012 8:44:59 PM

Operations

operations ————————————————————————————————————				
public Init (context : swapi) : boolean				
Parameters	context	context		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 7, 2012 12:53:06 PM		
	Last Modified	Oct 7, 2012 1:02:55 PM		
	Type Modifier	*		
	Туре	swapi		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation		Function called once during the INIT status. It creates the interfaces, variables and initializes parameters.		
Author	ismael	ismael		
Create Date Time	Oct 3, 2012 11:34:45 AM	Oct 3, 2012 11:34:45 AM		
Last Modified	Oct 7, 2012 1:58:35 PM	Oct 7, 2012 1:58:35 PM		
Ordered	false	false		
Unique	true	true		
Query	false	false		

public Run (context : swapi) : boolean

Parameters	context		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 7, 2012 1:35:30 PM	
	Last Modified	Oct 7, 2012 1:49:03 PM	
	Type Modifier	*	
	Туре	swapi	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Documentation	Function called each SP algorithms.	Function called each time-slot during the RUN status. It runs the SP algorithms.	
Author	ismael		
Create Date Time	Oct 3, 2012 11:34:32 AM		
Last Modified	Oct 7, 2012 1:58:35 PM		
Ordered	false		
Unique	true		
Query	false		

public Stop (context : swapi) : boolean				
Parameters	context	context		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 7, 2012 1:36:12 PM		
	Last Modified	Oct 7, 2012 1:49:03 PM		
	Type Modifier	*		
	Туре	swapi		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Function called once during the STOP status. Closes all opened resources and calls swapi.Exit().			
Author	ismael			
Create Date Time	Oct 3, 2012 11:34:42 AM			
Last Modified	Oct 7, 2012 1:58:35 PM			
Ordered	false			
Unique	true			
Query	false			



Name Value

Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	This is the module's interface to ALOE. It provides functions for creation of interfaces, global variables, pre-initialized values, log files and time counters. See swapi_module class for information on how to define a module.
Author	ismael
Create Date Time	Sep 17, 2012 12:52:20 AM
Last Modified	Oct 7, 2012 2:05:46 PM

Attributes

public module : module			
Author	ismael		
Create Date Time	Sep 18, 2012 9:54:02 AM		
Last Modified	Oct 6, 2012 3:01:00 PM		
Туре	module		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public tstamp : int						
Author	ismael					
Create Date Time	Oct 2, 2012 12	::53:18 PM				
Last Modified	Oct 6, 2012 3:0	01:00 PM				
Туре	int int					
Allow Empty Name	false					
Getter	false	false Setter false				
Derived	false					
Multiplicity	Unspecified					
Aggregation	None					
Derived Union	false					
Read Only	false					
Leaf	false					

public probeltf : hwapi_itf_physic				
Author	ismael			
Create Date Time	Oct 3, 2012 11:23:51 AM			
Last Modified	Oct 6, 2012 3:01:00 PM			
Туре	hwapi_itf_physic			
Allow Empty Name	false			
Getter	false Setter false			
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public changing_status : boolean				
Author	ismael	ismael		
Create Date Time	Oct 3, 2012 11:	34:19 AM		
Last Modified	Oct 6, 2012 3:0	1:00 PM		
Initial Value	false			
Туре	boolean	o boolean		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false	false		
Leaf	false	·		

private closed_resources : boolean				
Author	ismael			
Create Date Time	Oct 3, 2012 8:4	46:24 PM	,	
Last Modified	Oct 6, 2012 3:0	01:00 PM		
Initial Value	false			
Туре	boolean	boolean		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false	false		
Multiplicity	Unspecified	Unspecified		
Aggregation	None	None		
Derived Union	false	false		
Read Only	false			
Leaf	false			

Operations

public exit ()	
Static	false
Leaf	false
Documentation	This function is called by the sStop() function and the _abort() functions. It removes the module from the execution pipeline in ProcThread. The next timeslot the module won't be executed.
Author	ismael
Create Date Time	Oct 3, 2012 8:53:03 PM
Last Modified	Oct 6, 2012 3:05:34 PM
Ordered	false
Unique	true
Query	false

public tstamp () : int	
Static	false
Leaf	false
Documentation	Returns the module's timestamp. This is the number of timeslots that the object has executed the INIT an RUN states. This function is always successful.
Author	ismael
Create Date Time	Sep 17, 2012 7:45:40 PM
Last Modified	Oct 6, 2012 11:38:05 AM
Ordered	false
Unique	true
Query	false

Parameters	name		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:48:30 PM	
	Last Modified	Sep 17, 2012 7:48:35 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	1) Find an empty space in +counters 2) call counters[i].create(name) 3) return &counters[i]		
Author	ismael		
Create Date Time	Sep 17, 2012 7:48:12 PM		
Last Modified	Oct 6, 2012 12:53:21 PM		
Ordered	false		
Unique	true		
Query	false		

public log_create (name : string) : swapi_log				
Parameters	name			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 3, 2012 8:51:36 PM		
	Last Modified	Oct 3, 2012 8:54:52 PM		
	Туре	string		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	1) Find an empty space in +logs 2) call logs[i].create(name) 3) return &logs[i]			
Author	ismael			
Create Date Time	Oct 3, 2012 8:51:29 PM			
Last Modified	Oct 5, 2012 6:37:37 PM			
Ordered	false			
Unique	true			
Query	false			

Parameters	fnc		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 3, 2012 12:38:51 PM	
	Last Modified	Oct 3, 2012 12:39:13 PM	
	Туре	fncPtr	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	wrapper to the module's skeleton new state function.		
Author	ismael		
Create Date Time	Oct 3, 2012 12:38:26 PM		
Last Modified	Oct 5, 2012 6:37:37 PM		
Ordered	false		
Unique	true		
Query	false		

private report_variable (variable : module_variable)				
Parameters	variable			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 3, 2012 12:39:07 PM		
	Last Modified	Oct 5, 2012 6:37:37 PM		
	Туре	module_variable		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	Use the probeltf to send the variable.reportPacket to the manager			
Author	ismael			
Create Date Time	Oct 3, 2012 12:38:51 PM			
Last Modified	Oct 5, 2012 6:37:37 PM			
Ordered	false			
Unique	true			
Query	false			

Relationships

Relationships			
Unnamed Association			
To (counters)	Name	Value	
	End Model Element	swapi_counter	
	Author	ismael	
	Create Date Time	Oct 6, 2012 2:48:27 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	counter_MAX	
	Visibility	public	
	Aggregation Kind None		
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 6, 2012 2:48:27 PM		
Last Modified	Oct 7, 2012 1:49:03 PM		
Derived	false		

Unnamed Association			
To (logs)	Name	Value	
	End Model Element	swapi_log	
	Author	ismael	
	Create Date Time	Oct 6, 2012 2:48:32 PM	
	Provide Property Getter false Method		
	Provide Property Setter Method	false	
	Multiplicity	log_MAX	
	Visibility	public	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 6, 2012 2:48:32 PM		
Last Modified	Oct 7, 2012 1:49:03 PM		
Derived	false		

Unnamed Association			
To (error)	Name	Value	
	End Model Element	swapi_error	
	Author	ismael	
	Create Date Time	Oct 7, 2012 1:50:22 PM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	1	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 7, 2012 1:50:22 PM		
Last Modified	Oct 7, 2012 1:58:35 PM		
Derived	false		

Unnamed Association				
From	Name	Value		
	End Model Element	hwapi_process		
	Author	ismael		
	Create Date Time	Oct 6, 2012 3:19:41 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind Aggregation			
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 6, 2012 3:19:41 PM	Oct 6, 2012 3:19:41 PM		
Last Modified	Oct 7, 2012 1:49:03 PM	Oct 7, 2012 1:49:03 PM		
Derived	false			

swapi_static

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	This class has to be linked statically with any ALOE waveform module.
Author	ismael
Create Date Time	Oct 6, 2012 3:17:13 PM
Last Modified	Oct 7, 2012 1:49:03 PM

Operations

public _run_cycle (conte	ext : swapi)			
Parameters	context	context		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 6, 2012 3:03:32 PM		
	Last Modified	Oct 6, 2012 3:05:34 PM		
	Type Modifier	*		
	Туре	swapi		
	Direction	inout		
Static	false	false		
Leaf	false	false		
Documentation	This is an internal SWAPI function, called by the hwapi_processs each timeslot. It does not follow the public method naming convention. This function manages the status state machine, computes execution time statistics, writes log files and produces variable reports. The status STOP and INIT are executed only once in non real-time priority.			
Author	ismael			
Create Date Time	Oct 2, 2012 11:01:28 AM	Oct 2, 2012 11:01:28 AM		
Last Modified	Oct 6, 2012 3:29:18 PM	Oct 6, 2012 3:29:18 PM		
Ordered	false	false		
Unique	true			
Query	false			

public _abort (context : swapi)				
Parameters	context	context		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 6, 2012 3:04:56 PM		
	Last Modified	Oct 6, 2012 3:05:34 PM		
	Type Modifier	*		
	Туре	swapi		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	called from the kernel or the swapi due to some error. Set mymodule.status=STOP and call sStop()			
Author	ismael			
Create Date Time	Oct 3, 2012 8:38:13 PM			
Last Modified	Oct 6, 2012 3:29:18 PM			
Ordered	false			
Unique	true			

Query	false
Quoiy	14100

■ hwapi_process

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A HWAPI Process is defined as dynamically loaded shared library with two symbols that *MUST* be defined:startup(arg0,arg1): This function is called at load-time and is not subject to real-time constraintsrunCycle(): This function is called each time-slot and is subject to real-time constraints. It is used to load and execute signal processing waveform modules. The HWAPI.Process objects are instantiated by Base.initializeNode() function at boot. A call to create() loads the module into memory. A call to startup() calls the _startup() function and a call to places the _runCycle() function into the pipelined execution queue (see Proc-Thread class)
Author	ismael
Create Date Time	Sep 18, 2012 1:00:28 AM
Last Modified	Oct 7, 2012 2:05:46 PM

Attributes

private pid : int				
Author	ismael			
Create Date Time	Sep 18, 2012 1	1:27:24 AM		
Last Modified	Sep 24, 2012 1	11:45:57 AM		
Туре	o int	int int		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public binary_path : string

Documentation	Path to the process binary program code. It can be a program or dynamic library, depending on the platform (dynamic library in linux).				
Author	ismael				
Create Date Time	Sep 18, 2012 1:27:33 AM				
Last Modified	Oct 6, 2012 12:14:27 PM				
Туре	string				
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false	·			
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public exec_position : in	t					
Documentation	Execution p	Execution position in the pipeline.				
Author	ismael	ismael				
Create Date Time	Sep 18, 2012	Sep 18, 2012 1:27:52 AM				
Last Modified	Oct 6, 2012 1	Oct 6, 2012 12:14:27 PM				
Initial Value	0	0				
Туре	int	o int				
Allow Empty Name	false	false				
Getter	false	Setter	false			
Derived	false	false				
Multiplicity	Unspecified	Unspecified				
Aggregation	None	None				
Derived Union	false					
Read Only	false					
Leaf	false					

public processor_idx : in	t			
Author	ismael	ismael		
Create Date Time	Sep 24, 2012	12:09:06 PM		
Last Modified	Oct 6, 2012 1	2:14:27 PM		
Initial Value	0			
Туре	o int	int int		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

private handle : void				
Author	ismael			
Create Date Time	Oct 2, 2012 10:	11:38 AM		
Last Modified	Oct 2, 2012 10:	21:51 AM		
Type Modifier	*			
Туре	o void			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false		_	
Leaf	false		· · ·	

public run_point : fncPtr			
Author	ismael		
Create Date Time	Oct 3, 2012 11:50:23 AM	,	
Last Modified	Oct 6, 2012 12:14:27 PM		
Туре	fncPtr		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public abort_point : fncP	tr			
Author	ismael	,		
Create Date Time	Oct 3, 2012 9:	08:23 PM		
Last Modified	Oct 6, 2012 12	2:14:27 PM		
Type Modifier	*			
Туре	fncPtr			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None	None		
Derived Union	false			
Read Only	false			
Leaf	false			

public runnable : boolean			
Author	ismael		
Create Date Time	Oct 3, 2012 9:33:02 PM	_	
Last Modified	Oct 3, 2012 9:40:37 PM		
Туре	boolean		
Allow Empty Name	false	-	
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false	_	
Read Only	false		
Leaf	false		

public finish_callback : fn	cPtr			
Author	ismael	ismael		
Create Date Time	Oct 4, 2012 1	:28:56 AM		
Last Modified	Oct 6, 2012 1	2:14:27 PM		
Type Modifier	*			
Туре	fncPtr	fncPtr		
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public finish_code : int			
Author	ismael		
Create Date Time	Oct 4, 2012 1:30:40 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Туре	o int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public module : module			
Author	ismael		
Create Date Time	Oct 4, 2012 1:34:46 AM	_	
Last Modified	Oct 4, 2012 1:36:10 AM		
Туре	module		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false	-	
Multiplicity	Unspecified	_	
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

public error_msg : string			
Author	ismael		
Create Date Time	Oct 4, 2012 9:12:10 AM		
Last Modified	Oct 6, 2012 12:14:27 PM		
Туре	string		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false		
Read Only	false		
Leaf	false		

Operations

public launch ()	
Static	false
Leaf	false
Documentation	Loads the library into memory and prepares its execution. 1) If pid>0, the slot is already in use, return error 2) Generate a new pid 3) handle=dlopen(binary_path, RTDL_NOW); to dynamically load the shared library. 4) run_point=dlsym(handle, _run_cycle); 5) start_point=dlsym(handle, _abort); 6) save pointer to allocated pipeline: self->pipeline=hwapi->pipelines[self->processor_idx];
Author	ismael
Create Date Time	Sep 17, 2012 1:01:44 AM
Last Modified	Oct 6, 2012 3:39:38 PM
Ordered	false
Unique	true
Query	false

public remove ()	
Static	false
Leaf	false
Documentation	 Call hwapi_pipeline_remove(self->pipeline,self); Call to dlclose(handle) Set pid=0 if finishCallback!=null, call the function
Author	ismael
Create Date Time	Sep 17, 2012 1:06:53 AM
Last Modified	Oct 6, 2012 3:39:19 PM

Ordered	false
Unique	true
Query	false

public pid ()	
Static	false
Leaf	false
Documentation	Returns the process id.
Author	ismael
Create Date Time	Sep 24, 2012 11:43:33 AM
Last Modified	Oct 5, 2012 2:11:57 PM
Ordered	false
Unique	true
Query	false

public run ()	
Static	false
Leaf	false
Documentation	Adds the process to the pipeline queue of the corresponding pipeline object, that is hwapi_pipeline_add(self->pipeline,self)
Author	ismael
Create Date Time	Oct 3, 2012 11:44:41 AM
Last Modified	Oct 6, 2012 3:39:19 PM
Ordered	false
Unique	true
Query	false

Unnamed Association				
To (swapi_context)	Name	Value		
	End Model Element	swapi		
	Author	ismael		
	Create Date Time	Oct 6, 2012 3:19:41 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	1		
	Visibility	public		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 6, 2012 3:19:41 PM			
Last Modified	Oct 7, 2012 1:49:03 PM			
Derived	false			

■swapi_error

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 7, 2012 1:50:05 PM
Last Modified	Oct 7, 2012 8:09:19 PM

Attributes

public code : int				
Author	ismael			
Create Date Time	Oct 7, 2012 1	:50:50 PM		
Last Modified	Oct 7, 2012 1	:58:35 PM		
Туре	o int			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

Operations

public string () : char	
Static	false
Leaf	false
Author	ismael
Create Date Time	Oct 7, 2012 1:50:42 PM
Last Modified	Oct 7, 2012 8:09:19 PM
Type Modifier	*
Ordered	false
Unique	true
Query	false

public code () : int		
Static	false	
Leaf	false	
Author	ismael	
Create Date Time	Oct 7, 2012 1:50:45 PM	
Last Modified	Oct 7, 2012 8:09:19 PM	
Ordered	false	
Unique	true	
Query	false	

Unnamed Association				
From	Name	Value		
	End Model Element	swapi		
	Author	ismael		
	Create Date Time	Oct 7, 2012 1:50:22 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified			
Author	ismael	ismael		
Create Date Time	Oct 7, 2012 1:50:22 PM	Oct 7, 2012 1:50:22 PM		
Last Modified	Oct 7, 2012 1:58:35 PM	Oct 7, 2012 1:58:35 PM		
Derived	false			

■swapi_counter

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A Counter is a class used to count short periods of time in a timeslot execution cycle, for instance, to measure the execution time of some parts of the code. It is associated with a public variable the name passed to the create() function. After a call to Stop(), the number of microseconds elapsed since the previous call to Start() is saved in the variable.
Author	ismael

Create Date Time	Oct 2, 2012 1:11:54 PM
Last Modified	Oct 6, 2012 3:01:00 PM

Attributes

public count : time_t				
Author	ismael			
Create Date Time	Oct 2, 2012 1	I:16:03 PM		
Last Modified	Oct 6, 2012 1	11:58:05 AM		
Type Modifier	[3]			
Туре	time_t			
Allow Empty Name	false	false		
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public id : int				
Author	ismael	,		
Create Date Time	Oct 2, 2012 1:	16:25 PM		
Last Modified	Oct 3, 2012 1	1:27:04 AM		
Туре	int	,		
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false	,	ì	
Multiplicity	Unspecified			
Aggregation	None	,		
Derived Union	false			
Read Only	false			
Leaf	false			

public name : string				
Author	ismael			
Create Date Time	Oct 2, 2012 1:16:43 PM	1	,	
Last Modified	Oct 6, 2012 11:58:05 A	.M		
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false			

public variable : module_variable					
Author	ismael	ismael			
Create Date Time	Oct 2, 2012 1:	17:36 PM			
Last Modified	Oct 6, 2012 11	:58:05 AM			
Туре	module_va	module_variable			
Allow Empty Name	false	false			
Getter	false	Setter	false		
Derived	false	false			
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false	false			
Read Only	false				
Leaf	false				

Operations

public init (name : string) : boolean				
Parameters	name			
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 2, 2012 1:18:30 PM		
	Last Modified	Oct 3, 2012 11:27:04 AM		
	Туре	string		
	Direction	inout		
Static	false			
Leaf	false			
Documentation	 save name find a free ModuleVariable in mymodule and fill attributes call hwapi.openShm() 			

	4) save pointer to shmPtr	
Author	ismael	
Create Date Time	Oct 2, 2012 1:18:22 PM	
Last Modified	Oct 6, 2012 11:05:56 AM	
Ordered	false	
Unique	true	
Query	false	

public close ()	
Static	false
Leaf	false
Documentation	Releases the variable's shared memory and frees the ModuleVariable object
Author	ismael
Create Date Time	Sep 17, 2012 7:48:30 PM
Last Modified	Oct 5, 2012 6:37:37 PM
Ordered	false
Unique	true
Query	false

public start ()	
Static	false
Leaf	false
Documentation	Starts counting time
Author	ismael
Create Date Time	Sep 17, 2012 7:48:37 PM
Last Modified	Oct 5, 2012 6:37:37 PM
Ordered	false
Unique	true
Query	false

public stop ()	
Static	false
Leaf	false
Documentation	Stops counting time and saves the elapsed microseconds in the variable.
Author	ismael
Create Date Time	Sep 17, 2012 7:48:42 PM
Last Modified	Oct 5, 2012 6:37:37 PM
Ordered	false
Unique	true
Query	false

Relationships				
Unnamed Association				
From	Name	Value		
	End Model Element	swapi		
	Author	ismael		
	Create Date Time	Oct 6, 2012 2:48:27 PM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	Aggregation		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false	false		
Visibility	Unspecified	Unspecified		
Author	ismael	ismael		
Create Date Time	Oct 6, 2012 2:48:27 PM	Oct 6, 2012 2:48:27 PM		
Last Modified	Oct 7, 2012 1:49:03 PM	Oct 7, 2012 1:49:03 PM		
Derived	false			

≣swapi_log

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	A Log is a mechanism for the module to write text to a logfile without interrupting real-time processing. Successive calls to Log() or Write() functions store the string in a temporal buffer. At the end of the timeslot, a new thread with lower priority is created to write the contents a non-volatile media provided by the hwapi (e.g. a hard-drive or flash-rom). Note that it may

	happen that the contents are never written, in the case that the processor is 100% of its time running signal processing tasks.
Author	ismael
Create Date Time	Oct 2, 2012 1:11:55 PM
Last Modified	Oct 6, 2012 3:01:00 PM

Attributes

public name : string				
Author	ismael			
Create Date Time	Oct 3, 2012 12:19:36 PM			
Last Modified	Oct 6, 2012 11:58:05 AM			
Туре	string			
Allow Empty Name	false			
Getter	false	Setter	false	
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false	,		

public buffer : string					
Author	ismael	ismael			
Create Date Time	Oct 3, 2012 12	2:19:44 PM			
Last Modified	Oct 6, 2012 1	1:58:05 AM			
Туре	string	string			
Allow Empty Name	false				
Getter	false	Setter	false		
Derived	false				
Multiplicity	Unspecified				
Aggregation	None				
Derived Union	false				
Read Only	false				
Leaf	false				

public fd : int				
Author	ismael			
Create Date Time	Oct 3, 2012 12	2:20:33 PM		
Last Modified	Oct 6, 2012 1	1:58:05 AM		
Туре	int			
Allow Empty Name	false			
Getter	false	Sette	er	false
Derived	false			
Multiplicity	Unspecified			
Aggregation	None			
Derived Union	false			
Read Only	false			
Leaf	false	,		

public w_ptr : int			
Author	ismael		
Create Date Time	Oct 3, 2012 12:26:42 PM		
Last Modified	Oct 6, 2012 11:58:05 AM	I	
Туре	int		
Allow Empty Name	false		
Getter	false	Setter	false
Derived	false		
Multiplicity	Unspecified		
Aggregation	None		
Derived Union	false	_	
Read Only	false		
Leaf	false		

Operations

public init (name) : book	ean			
Parameters	name	name		
	Multiplicity	Unspecified		
	Author	ismael		
	Create Date Time	Oct 3, 2012 12:21:40 PM		
	Last Modified	Oct 3, 2012 12:25:20 PM		
	Direction	inout		
Static	false			
Leaf	false			
Author	ismael			
Create Date Time	Sep 17, 2012 7:48:47 PM	Л		
Last Modified	Oct 6, 2012 12:14:27 PM	1		
Ordered	false			
Unique	true			
Query	false			

public close ()	
Static	false
Leaf	false
Author	ismael
Create Date Time	Sep 17, 2012 7:49:01 PM
Last Modified	Oct 5, 2012 6:37:37 PM
Ordered	false
Unique	true
Query	false

public write (str : string)			
Parameters	str		
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Sep 17, 2012 7:49:26 PM	
	Last Modified	Sep 17, 2012 7:52:29 PM	
	Туре	string	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Concatenates the string	to buffer	
Author	ismael		
Create Date Time	Sep 17, 2012 7:49:17 PM		
Last Modified	Oct 5, 2012 6:37:37 PM		
Ordered	false		

Unique	true
Query	false

public Iprintf (va_args)		
Parameters	va_args	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 3, 2012 12:22:19 PM
	Last Modified	Oct 3, 2012 12:25:20 PM
	Direction	inout
Static	false	
Leaf	false	
Documentation	Use sprintf to format string and concatenates to buffer	
Author	ismael	
Create Date Time	Oct 3, 2012 12:22:09 PM	
Last Modified	Oct 3, 2012 12:28:23 PM	
Ordered	false	
Unique	true	
Query	false	

private _write_log ()	
Static	false
Leaf	false
Documentation	Writes the contents of the buffer. Called by runCycle at the end of the timeslot.
Author	ismael
Create Date Time	Oct 3, 2012 12:22:19 PM
Last Modified	Oct 5, 2012 6:37:37 PM
Ordered	false
Unique	true
Query	false

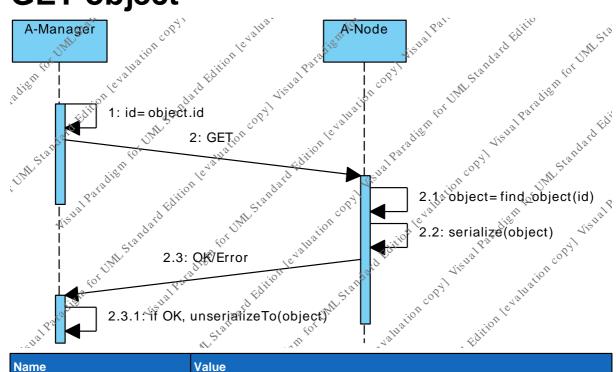
Unnamed Association		
From	Name	Value
	End Model Element	swapi
	Author	ismael
	Create Date Time	Oct 6, 2012 2:48:32 PM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	Aggregation
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 6, 2012 2:48:32 PM	
Last Modified	Oct 7, 2012 1:49:03 PM	
Derived	false	



Name	Value
Documentation	swapi_static is linked statically to the module. The rest of the classes are shared part of a shared library
Author	ismael
Create Date Time	Oct 6, 2012 3:20:07 PM
Last Modified	Oct 7, 2012 1:02:55 PM

Sequence Diagram

GET object



Name	Value
Name	GET object
Author	ismael
Create Date Time	Oct 5, 2012 12:45:42 PM
Last Modified	Oct 5, 2012 3:49:13 PM

Summary

Name	Documentation
A-Manager	
A-Node	

Details

🖶 A-Manager

Name	Value
Author	ismael
Create Date Time	Oct 5, 2012 12:45:49 PM
Last Modified	Oct 5, 2012 12:51:52 PM
Multiplicity	Unspecified
Active	false
Stopped	false
Multi Object	false

if OK, unserializeTo(object) : Message			
То	Name	Value	
	End Model Element	A-Manager	
	Author	ismael	
	Create Date Time	Oct 5, 2012 12:47:18 PM	
Author	ismael		
Create Date Time	Oct 5, 2012 12:47:18 PM		
Last Modified	Oct 5, 2012 12:51:52 PM		
Туре	Self Message		
Sequence Number	2.3.1		
Asynchronous	false		

id=object.id : Message		
То	Name	Value
	End Model Element	A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 12:46:21 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:46:21 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Self Message	
Sequence Number	1	
Asynchronous	false	

GET : Message		
То	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:46:30 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:46:30 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2	
Asynchronous	false	

OK/Error : Message		
From	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:47:07 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:47:07 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2.3	
Asynchronous	false	

₹ A-Node

Name	Value
Author	ismael
Create Date Time	Oct 5, 2012 12:45:52 PM
Last Modified	Oct 5, 2012 12:51:52 PM
Multiplicity	Unspecified
Active	false
Stopped	false
Multi Object	false

object=find_object(id) : Message		
То	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:46:40 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:46:40 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Self Message	
Sequence Number	2.1	
Asynchronous	false	

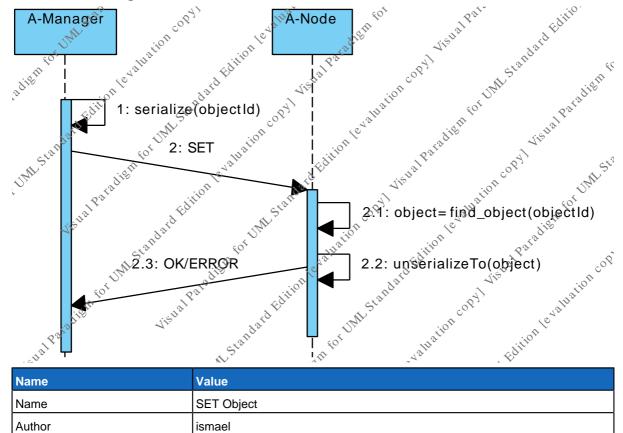
OK/Error : Message		
То	Name	Value
	End Model Element	A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 12:47:07 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:47:07 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2.3	
Asynchronous	false	

serialize(object) : Message		
То	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:46:57 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:46:57 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Self Message	
Sequence Number	2.2	
Asynchronous	false	

GET : Message		
From	Name	Value
	End Model Element	A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 12:46:30 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:46:30 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2	
Asynchronous	false	

Sequence Diagram

SET Object



Summary

Create Date Time

Last Modified

Name	Documentation
A-Manager	
A-Node	

Oct 5, 2012 12:39:09 PM

Oct 5, 2012 3:49:15 PM

Details

7 A-Manager

Name	Value
Author	ismael
Create Date Time	Oct 5, 2012 12:39:18 PM
Last Modified	Oct 5, 2012 12:51:52 PM
Multiplicity	Unspecified
Active	false
Stopped	false
Multi Object	false

serialize(objectId) : Message		
То	Name	Value
	End Model Element	A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 12:40:13 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:40:13 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Self Message	
Sequence Number	1	
Asynchronous	false	

SET : Message		
То	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:40:35 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:40:35 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2	
Asynchronous	false	

OK/ERROR : Message		
From	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:42:10 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:42:10 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2.3	
Asynchronous	false	

₹ A-Node

Name	Value
Author	ismael
Create Date Time	Oct 5, 2012 12:39:25 PM
Last Modified	Oct 5, 2012 12:51:52 PM
Multiplicity	Unspecified
Active	false
Stopped	false
Multi Object	false

object=find_object(objectId) : Message		
То	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:41:56 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:41:56 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Self Message	
Sequence Number	2.1	
Asynchronous	false	

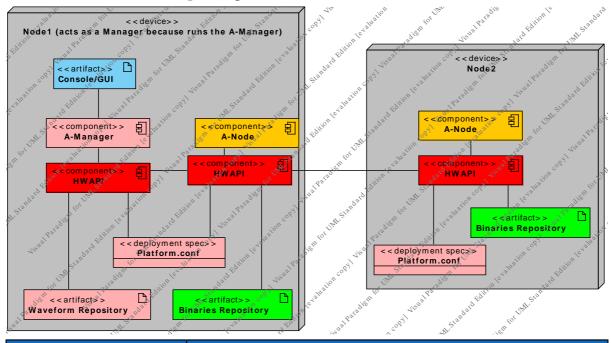
OK/ERROR: Message			
То	Name	Value	
	End Model Element	A-Manager	
	Author	ismael	
	Create Date Time	Oct 5, 2012 12:42:10 PM	
Author	ismael		
Create Date Time	Oct 5, 2012 12:42:10 PM	Oct 5, 2012 12:42:10 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	Duration Message	
Sequence Number	2.3	2.3	
Asynchronous	false	false	

unserializeTo(object) : Message		
То	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 12:42:00 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:42:00 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Self Message	
Sequence Number	2.2	
Asynchronous	false	

SET : Message		
From	Name	Value
	End Model Element	A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 12:40:35 PM
Author	ismael	
Create Date Time	Oct 5, 2012 12:40:35 PM	
Last Modified	Oct 5, 2012 12:51:52 PM	
Туре	Duration Message	
Sequence Number	2	
Asynchronous	false	

Deployment Diagram

Platform Deployment



Name	Value
Name	Platform Deployment
Author	ismael
Create Date Time	Sep 12, 2012 2:07:11 AM
Last Modified	Oct 6, 2012 3:24:50 PM

Summary

Name	Documentation
Node1 (acts as a Manager because	
runs the A-Manager)	
Node2	
■ Console/GUI	
a A-Node	
a A-Manager	
a A-Node	
1 HWAPI	
1 HWAPI	
€ HWAPI	
Binaries Repository	
Platform.conf	
Platform.conf	
Waveform Repository	
Binaries Repository	

Details

■ Node1 (acts as a Manager because runs the A-Manager)

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Stereotypes	device
Author	ismael
Create Date Time	Sep 12, 2012 2:09:02 AM
Last Modified	Oct 5, 2012 11:23:14 AM

Resident Components

Name	Documentation
a A-Node	
a A-Manager	
a HWAPI	

■Node2

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Stereotypes	device
Author	ismael
Create Date Time	Sep 12, 2012 2:09:05 AM
Last Modified	Oct 5, 2012 11:14:29 AM



Name	Value
Abstract	false
Leaf	false
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 11:06:30 AM
Last Modified	Oct 5, 2012 11:14:29 AM

Relationships		
Unnamed Association		
То	Name	Value
	End Model Element	a A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 11:08:33 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:08:33 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	



Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 11:06:47 AM
Last Modified	Oct 5, 2012 11:23:14 AM
Indirectly Instantiated	true

Unnamed Association		
То	Name	Value
	End Model Element	€ HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:10:27 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:10:27 AM	
Last Modified	Oct 5, 2012 11:23:14 AM	
Derived	false	

a A-Manager

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 11:07:07 AM
Last Modified	Oct 5, 2012 11:23:14 AM
Indirectly Instantiated	true

Unnamed Association		
То	Name	Value
	End Model Element	€ HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:10:24 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:10:24 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Unnamed Association			
From	Name	Value	
	End Model Element	Console/GUI	
	Author	ismael	
	Create Date Time	Oct 5, 2012 11:08:33 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false	false	
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 5, 2012 11:08:33 AM		
Last Modified	Oct 5, 2012 11:14:29 AM		
Derived	false		

■ A-Node

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 11:06:47 AM
Last Modified	Oct 5, 2012 11:23:14 AM
Indirectly Instantiated	true

Unnamed Association			
То	Name	Value	
	End Model Element	€ HWAPI	
	Author	ismael	
	Create Date Time	Oct 5, 2012 11:10:27 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 5, 2012 11:10:27 AM	Oct 5, 2012 11:10:27 AM	
Last Modified	Oct 5, 2012 11:23:14 AM		
Derived	false		

HWAPI

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 11:09:54 AM
Last Modified	Oct 5, 2012 11:35:02 AM
Indirectly Instantiated	true

Unnamed Association		
To	Name	Value
	End Model Element	Platform.conf
	Author	ismael
	Create Date Time	Oct 5, 2012 11:12:19 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:12:19 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Unnamed Association			
То	Name	Value	
	End Model Element	€ HWAPI	
	Author	ismael	
	Create Date Time	Oct 5, 2012 11:13:09 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 5, 2012 11:13:09 AM		
Last Modified	Oct 5, 2012 11:14:29 AM		
Derived	false		

Unnamed Association				
То	Name	Value		
	End Model Element	Binaries Repository		
	Author	ismael		
	Create Date Time	Oct 5, 2012 11:29:28 AM		
	Provide Property Getter Method	false		
	Provide Property Setter Method	false		
	Multiplicity	Unspecified		
	Visibility	Unspecified		
	Aggregation Kind	None		
	Navigable	true		
	Derived	false		
	Derived Union	false		
	Read Only	false		
	Static	false		
	Leaf	false		
Abstract	false			
Leaf	false			
Visibility	Unspecified			
Author	ismael			
Create Date Time	Oct 5, 2012 11:29:28 AM			
Last Modified	Oct 5, 2012 11:35:02 AM			
Derived	false			

Unnamed Association			
From	Name	Value	
	End Model Element	1 HWAPI	
	Author	ismael	
	Create Date Time	Oct 5, 2012 11:10:19 AM	
	Provide Property Getter Method	false	
	Provide Property Setter Method	false	
	Multiplicity	Unspecified	
	Visibility	Unspecified	
	Aggregation Kind	None	
	Navigable	true	
	Derived	false	
	Derived Union	false	
	Read Only	false	
	Static	false	
	Leaf	false	
Abstract	false		
Leaf	false		
Visibility	Unspecified		
Author	ismael		
Create Date Time	Oct 5, 2012 11:10:19 AM		
Last Modified	Oct 5, 2012 11:14:29 AM		
Derived	false		

Unnamed Association		
From	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 11:10:27 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:10:27 AM	
Last Modified	Oct 5, 2012 11:23:14 AM	
Derived	false	

HWAPI

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 11:09:54 AM
Last Modified	Oct 5, 2012 11:35:02 AM
Indirectly Instantiated	true

Unnamed Association		
To	Name	Value
	End Model Element	Platform.conf
	Author	ismael
	Create Date Time	Oct 5, 2012 11:23:57 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:23:57 AM	
Last Modified	Oct 5, 2012 11:24:46 AM	
Derived	false	

Unnamed Association		
То	Name	Value
	End Model Element	Binaries Repository
	Author	ismael
	Create Date Time	Oct 5, 2012 11:24:00 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:24:00 AM	
Last Modified	Oct 5, 2012 11:24:46 AM	
Derived	false	

Unnamed Association		
From	Name	Value
	End Model Element	A-Node
	Author	ismael
	Create Date Time	Oct 5, 2012 11:10:27 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:10:27 AM	
Last Modified	Oct 5, 2012 11:23:14 AM	
Derived	false	

Unnamed Association		
From	Name	Value
	End Model Element	€ HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:13:09 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:13:09 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

HWAPI

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 11:09:50 AM
Last Modified	Oct 5, 2012 11:14:29 AM
Indirectly Instantiated	true

Kelationships		
Unnamed Association		
То	Name	Value
	End Model Element	I HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:10:19 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:10:19 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Unnamed Association		
То	Name	Value
	End Model Element	Platform.conf
	Author	ismael
	Create Date Time	Oct 5, 2012 11:11:07 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:11:07 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Unnamed Association		
То	Name	Value
	End Model Element	Waveform Repository
	Author	ismael
	Create Date Time	Oct 5, 2012 11:12:14 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:12:14 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Unnamed Association		
From	Name	Value
	End Model Element	A-Manager
	Author	ismael
	Create Date Time	Oct 5, 2012 11:10:24 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:10:24 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Binaries Repository

Name	Value
Abstract	false
Leaf	false
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 11:15:30 AM
Last Modified	Oct 5, 2012 11:35:02 AM

Relationships		
Unnamed Association		
From	Name	Value
	End Model Element	I HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:24:00 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:24:00 AM	
Last Modified	Oct 5, 2012 11:24:46 AM	
Derived	false	

Platform.conf

Name	Value
Abstract	false
Leaf	false
Visibility	Unspecified
Author	ismael
Create Date Time	Sep 12, 2012 2:19:59 AM
Last Modified	Oct 5, 2012 11:24:46 AM

Unnamed Association		
From	Name	Value
	End Model Element	€ HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:11:07 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:11:07 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Unnamed Association		
From	Name	Value
	End Model Element	■ HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:12:19 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:12:19 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

Platform.conf

Name	Value
Abstract	false
Leaf	false
Visibility	Unspecified
Author	ismael
Create Date Time	Sep 12, 2012 2:19:59 AM
Last Modified	Oct 5, 2012 11:24:46 AM

Relationships		
Unnamed Association		
From	Name	Value
	End Model Element	I HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:23:57 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:23:57 AM	
Last Modified	Oct 5, 2012 11:24:46 AM	
Derived	false	

Waveform Repository

Name	Value
Abstract	false
Leaf	false
Visibility	Unspecified
Author	ismael
Create Date Time	Sep 12, 2012 8:57:32 PM
Last Modified	Oct 5, 2012 11:14:29 AM

Unnamed Association		
From	Name	Value
	End Model Element	€ HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:12:14 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:12:14 AM	
Last Modified	Oct 5, 2012 11:14:29 AM	
Derived	false	

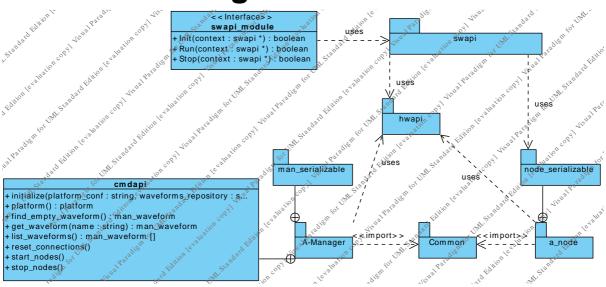
Binaries Repository

Name	Value
Abstract	false
Leaf	false
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 11:15:30 AM
Last Modified	Oct 5, 2012 11:35:02 AM

Relationships		
Unnamed Association		
From	Name	Value
	End Model Element	1 HWAPI
	Author	ismael
	Create Date Time	Oct 5, 2012 11:29:28 AM
	Provide Property Getter Method	false
	Provide Property Setter Method	false
	Multiplicity	Unspecified
	Visibility	Unspecified
	Aggregation Kind	None
	Navigable	true
	Derived	false
	Derived Union	false
	Read Only	false
	Static	false
	Leaf	false
Abstract	false	
Leaf	false	
Visibility	Unspecified	
Author	ismael	
Create Date Time	Oct 5, 2012 11:29:28 AM	
Last Modified	Oct 5, 2012 11:35:02 AM	
Derived	false	

Package Diagram

ALOE++ Packages



Name	Value
Name	ALOE++ Packages
Author	ismael
Create Date Time	Oct 5, 2012 12:55:37 PM
Last Modified	Oct 7, 2012 8:41:30 PM

Summary

Name	Documentation
swapi_module	
swapi	
hwapi	
man_serializable	
node_serializable	
a cmdapi	The front-end to the CmdAPI Interface. Does not add any extra functionality except for facilitating the platform management. On initialize(), creates a CmdPlatform object and nof_waveforms CmdWaveform objects. Those classes implement the platform management. The CmdFrontEnd just implements some functions to get the CmdWaveform object from the array. Typically, an object of this class is invoked by a thread running in the manager node (any node in the platform) with non-rt priority. This thread is in charge of parsing stdin user commands and calling the appropriate methods for each class. This class may also be used from a GUI, for
A-Manager	instance.
Common	
Common	



Details

swapi_module

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Stereotypes	Interface
Author	ismael
Create Date Time	Oct 7, 2012 1:53:43 PM
Last Modified	Oct 7, 2012 8:44:59 PM

Operations

public Init (context : swapi) : boolean		
Parameters	context	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Oct 7, 2012 12:53:06 PM
	Last Modified	Oct 7, 2012 1:02:55 PM
	Type Modifier	*
	Туре	swapi
	Direction	inout
Static	false	
Leaf	false	
Documentation	Function called once during the INIT status. It creates the interfaces, variables and initializes parameters.	
Author	ismael	
Create Date Time	Oct 3, 2012 11:34:45 AM	
Last Modified	Oct 7, 2012 1:58:35 PM	
Ordered	false	
Unique	true	
Query	false	

public Run (context : swapi) : boolean

Parameters	context	context	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 7, 2012 1:35:30 PM	
	Last Modified	Oct 7, 2012 1:49:03 PM	
	Type Modifier	*	
	Туре	swapi	
	Direction	inout	
Static	false	false	
Leaf	false	false	
Documentation	Function called each time-slot during the RUN status. It runs the SP algorithms.		
Author	ismael		
Create Date Time	Oct 3, 2012 11:34:32 AM	Oct 3, 2012 11:34:32 AM	
Last Modified	Oct 7, 2012 1:58:35 PM		
Ordered	false		
Unique	true	true	
Query	false		

public Stop (context : swapi) : boolean			
Parameters	context	context	
	Multiplicity	Unspecified	
	Author	ismael	
	Create Date Time	Oct 7, 2012 1:36:12 PM	
	Last Modified	Oct 7, 2012 1:49:03 PM	
	Type Modifier	*	
	Туре	swapi	
	Direction	inout	
Static	false		
Leaf	false		
Documentation	Function called once du resources and calls swa	ring the STOP status. Closes all opened upi.Exit().	
Author	ismael		
Create Date Time	Oct 3, 2012 11:34:42 AM		
Last Modified	Oct 7, 2012 1:58:35 PM		
Ordered	false		
Unique	true		
Query	false		

uses : Dependency	
То	swapi
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 7, 2012 8:35:13 PM
Last Modified	Oct 7, 2012 8:44:59 PM

swapi

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 17, 2012 5:46:12 PM
Last Modified	Oct 7, 2012 8:44:59 PM
Visibility	public

Name	Documentation
swapi_module	An ALOE module is a waveform module that performs the signal processing class. It links with the swapi_static class static library, which provides the _abort() and _run_cycle() functions required by the hwapi_process class. An ALOE module, at the same time, MUST provide the three functions declared in this interface.
	The three functions receive as a parameter a pointer to the swapi context (swapi *context). This pointer has to be passed as a first argument to any call to a method of the class swapi.
swapi	This is the module's interface to ALOE. It provides functions for creation of interfaces, global variables, pre-initialized values, log files and time counters. See swapi_module class for information on how to define a module.
swapi_counter	A Counter is a class used to count short periods of time in a timeslot execution cycle, for instance, to measure the execution time of some parts of the code. It is associated with a public variable the name passed to the create() function. After a call to Stop(), the number of microseconds elapsed since the previous call to Start() is saved in the variable.
swapi_log	A Log is a mechanism for the module to write text to a logfile without interrupting real-time processing. Successive calls to Log() or Write() functions store the string in a temporal buffer. At the end of the timeslot, a new thread with lower priority is

by the hwapi (e.g. a hard-drive or flash-rom). Note that it may happen that the contents are never written, in the case that the processor is 100% of its time running signal processing tasks.

Relationships

uses : Dependency	
То	hwapi
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 12:57:03 PM
Last Modified	Oct 5, 2012 1:18:14 PM

uses : Dependency	
То	node_serializable
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 1:18:08 PM
Last Modified	Oct 5, 2012 1:28:14 PM

uses : Dependency	
From	swapi_module
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 7, 2012 8:35:13 PM
Last Modified	Oct 7, 2012 8:44:59 PM

hwapi

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 17, 2012 5:46:05 PM
Last Modified	Oct 5, 2012 3:38:03 PM
Visibility	public

Name	Documentation
	The Base HWAPI class abstracts the platform (OS) and hardware particularities, for instance: timers, shared memory, physical interfaces and process creation/scheduling.

- machine	Only one instance of this class can be created on each node. This is created by the kernel-thread class at boot of every node or by the Manager process. The hwapi is in charge of controlling thread-local-storage. Therefore, there is no need to pass a pointer to the hwapi context to each function call. In linux, can be implemented using POSIX TLS orthread GCC. However, this is not strictly required since only one execution thread access thread-sensible functions at a time.
machine	Public structure configured at initialize() from the information read from platform.conf. Stores some properties of the local machine architecture.
hwapi_kernel	The HWAPI kernel schedules the execution of the ALOE-Node class and waveform modules in each platform's node. The main() is implemented in this class. When it starts, it creates the HWAPI-base class (which instantiates the rest of hwapi classes) and the ALOE-Node class (which processes commands from the manager). It initializes hardware devices and runs the main kernel timer. The execution timer, in Linux, can be driven from three different sources, chosen from the platform.conf file: 1) POSIX real-time timer 2) Synchronization packet, through a POSIX semaphore 3) Digital converter, through a POSIX semaphore
hwapi_process	A HWAPI Process is defined as dynamically loaded shared library with two symbols that *MUST* be defined:startup(arg0,arg1): This function is called at load-time and is not subject to real-time constraintsrunCycle(): This function is called each time-slot and is subject to real-time constraints. It is used to load and execute signal processing waveform modules. The HWAPI.Process objects are instantiated by Base.initializeNode() function at boot. A call to create() loads the module into memory. A call to startup() calls the _startup() function and a call to places the _runCycle() function into the pipelined execution queue (see Proc-Thread class)
hwapi_periodic	
hwapi_pipeline	A ProcThread is a POSIX-thread that runs in a single processor core with real-time priority and FIFO-scheduling (non-preemptable). It has a queue of function pointers which are called one after another. This functions are supposed to run SP tasks. The thread is synchronized with the kernel-thread with a shared memory POSIX semaphore. At the beginning of the timeslot, the kernel-thread actives a semaphore indicating the Proc-Thread may start its execution. After all functions are called, the Proc-Thread blocks on the semaphore again.
	These threads are detachable.

ac dac	
hwapi_process_errors	
itf	

uses : Dependency	
From	swapi swapi
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 12:57:03 PM
Last Modified	Oct 5, 2012 1:18:14 PM

uses : Dependency	
From	A-Manager
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 1:09:09 PM
Last Modified	Oct 5, 2012 1:18:14 PM

uses : Dependency	
From	a_node
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 1:09:13 PM
Last Modified	Oct 5, 2012 1:18:14 PM

man_serializable

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 1:00:15 PM
Last Modified	Oct 5, 2012 1:47:35 PM
Visibility	public

Name	Documentation
	Inherits from General.ModVariable. Part of the CMDAPI. Adds functionality to set or obtain variable values from the distributed modules.

man_module

Inherits from General.Module class. Part of the CMDAPI, used to update module's variables or execinfo information

man_waveform

Inherits from General. Waveform class. After the waveform is loaded to a platform, the class allows to send status change commands and update the local objects with the remote ALOE-Node waveform objects. A waveform must be parsed (parse()) prior to being loaded (load()).

Sample waveform configuration file:

```
modules:
convcoder:
     binary="convcoder1.0.so";
     proc=XXX // in mopts
     outputs=(
     ("output1", "decoder", "input1", 0.3), /* localItfName,
remoteModuleName, remoteItfName, BW requirements (in mbpts) */
     ( "output2", "otherMod", "output2", 1)
     );
     variables=(
     (name="code"; value=[0x79,0x10,0xf4];),
     (name="blocksize"; value=100;)
};
decoder:
     binary="decoder1.2.so";
     proc=XXX // in mopts
     inputs=( "input1", "convcoder", "output1"); /* Inputs do not specify
BW. Must coincide with output interface */
     outputs=( "output1", "sink", "input1", 0.1);
     variables=(
     (name="code"; value=[0x79,0x10,0xf4];),
     (name="blocksize"; value=100;),
     (name="SNR"; value=3.2;)
     );
};
decoder:
     binary="decoder1.2.so";
     proc=XXX // in mopts
```

node_serializable

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 14, 2012 12:51:11 PM
Last Modified	Oct 5, 2012 1:28:14 PM
Visibility	public

Name	Documentation
module_execinfo	The class attributes save information relative to the execution of the module.
module	Stores the attributes of waveform module.
waveform	Used by the node to save the loaded waveforms, its modules and variables. At LOAD command, the class is received and serializedTo() a free Waveform object instance. Then waveform attributes, modules and variables and all their attributes are created on pre-allocated objects instances.
module_variable	Class Inherited from the Variable class. This is used by the ALOE-Node only
module_interface	Data interface between modules.
sariable	A module variable is a variable that can be viewed (get) or modified (set) by the CMDAPI or any other module of the same waveform. This interaction is always *asynchronous* and there is no guarantee in terms of timings. An initialization value can be defined for a variable. In that case,
	it is specified in the .app file and sent to the Nodes during the waveform load phase. The waveform modules can restore their variables to the initialization value any time.

	Those variables which are not specified in the .app are not available to the manager (i.e. there is any ModuleVariable object associated to the Module object) until the module calls the SWAPI.InitVariable() function and the manager calls the moduleObj.update() or waveformObj.update() functions. It is recommended that the modules initialize their variables during INIT() and the manager calls waveformObj.update() after a successful INIT.
	This class is used by ALOE-Node. The CMDAPI uses the CmdVariable, which inherits from this class.
waveform_status	

uses : Dependency	
From	swapi
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 1:18:08 PM
Last Modified	Oct 5, 2012 1:28:14 PM

cmdapi

Name	Value
Active	false
Business Key Mutable	true
Business Model	false
Visibility	public
Leaf	false
Root	false
Documentation	The front-end to the CmdAPI Interface. Does not add any extra functionality except for facilitating the platform management. On initialize(), creates a CmdPlatform object and nof_waveforms CmdWaveform objects. Those classes implement the platform management. The CmdFrontEnd just implements some functions to get the CmdWaveform object from the array.
	Typically, an object of this class is invoked by a thread running in the manager node (any node in the platform) with non-rt priority. This thread is in charge of parsing stdin user commands and calling the appropriate methods for each class. This class may also be used from a GUI, for instance.
Author	ismael

Create Date Time	Sep 12, 2012 1:50:47 AM
Last Modified	Oct 7, 2012 9:40:24 PM

Operations

public initialize (platform_conf	: string, waveforms_repositor	y : string)
Parameters	platform_conf	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:53:28 AM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	string
	Direction	inout
	waveforms_repository	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:53:28 AM
	Last Modified	Oct 5, 2012 1:47:35 PM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Documentation	configuration file. Then reads the waveform	` ' '
Author	ismael	
Create Date Time	Sep 14, 2012 11:52:22 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public platform () : platform	
Static	false
Leaf	false
Documentation	returns the platform object
Author	ismael
Create Date Time	Sep 14, 2012 11:54:18 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false

Unique	true
Query	false

public find_empty_waveform () : man_waveform		
Static	false	
Leaf	false	
Documentation	Returns the first CmdWaveform Object in the waveformsArray which is not associated to any waveform.	
Author	ismael	
Create Date Time	Sep 18, 2012 1:35:17 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public get_waveform (name : string) : man_waveform		
Parameters	name	
	Multiplicity	Unspecified
	Author	ismael
	Create Date Time	Sep 14, 2012 11:54:18 AM
	Last Modified	Sep 14, 2012 11:59:52 AM
	Туре	string
	Direction	inout
Static	false	
Leaf	false	
Documentation	returns the CmdWaveford	m object associated to the waveform
Author	ismael	
Create Date Time	Sep 14, 2012 11:53:47 AM	
Last Modified	Oct 5, 2012 1:47:35 PM	
Ordered	false	
Unique	true	
Query	false	

public list_waveforms () : man_waveform	
Static	false
Leaf	false
Documentation	returns the array of CmdWaveforms objects that where parsed from the directory passed to the initialize function.
Author	ismael
Create Date Time	Sep 14, 2012 11:53:30 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Type Modifier	

Ordered	false
Unique	true
Query	false

public reset_connection	s ()
Static	false
Leaf	false
Documentation	Calls cmdPlatform.connect() and then cmdPlatform.disconnect()
Author	ismael
Create Date Time	Sep 26, 2012 10:38:47 AM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public start_nodes ()	
Static	false
Leaf	false
Documentation	rsh runcf on all nodes
Author	ismael
Create Date Time	Sep 26, 2012 12:22:59 PM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

public stop_nodes ()	
Static	false
Leaf	false
Documentation	rsh killcf on all nodes
Author	ismael
Create Date Time	Sep 26, 2012 12:23:04 PM
Last Modified	Oct 5, 2012 1:47:35 PM
Ordered	false
Unique	true
Query	false

A-Manager

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 17, 2012 5:46:16 PM
Last Modified	Oct 5, 2012 2:02:19 PM
Visibility	public

Name	Documentation
man_serializable	
cmdapi	The front-end to the CmdAPI Interface. Does not add any extra functionality except for facilitating the platform management.
	On initialize(), creates a CmdPlatform object and nof_waveforms CmdWaveform objects. Those classes implement the platform management. The CmdFrontEnd just implements some functions to get the CmdWaveform object from the array.
	Typically, an object of this class is invoked by a thread running in the manager node (any node in the platform) with non-rt priority. This thread is in charge of parsing stdin user commands and calling the appropriate methods for each class. This class may also be used from a GUI, for instance.
platform	The CmdPlatform class manages the hardware parts of the platform. This config() function does not follow the platform-independence rules and is platform-dependant, because it reads the platform configuration file, which is particularized for a given platform (in this case, linux platform). The rest of the functions are platform-independent.
	Sample platform configuration file format (libconfig format, see http://www.hyperrealm.com/libconfig/test.cfg.txt):
	platform: { timeslot=100;

```
};
manager:
 ip_address="192.168.1.1"; // IP address of the host where
the manager will be executed
 clock local=TRUE;
                           // If it runs in a node, it can obtain
the timing using shared memory IPC. If set to false, it will obtain
timing from synchronization.master
};
network:
 ctrl ={port=7000; proto="tcp";}
                                      // The manager connects
to each node using this port
 probe={port=7001; proto="udp";}
                                         // The manager
connects to each node using this port
 sync ={port=7002; proto="udp";}
                                        // Each node creates a
listening socket on this range of ports
 data ={ports=[7003,7010]: proto="udp";} /* These are the
ports used for data interfaces. Each port is used to open a
socket for every module-to-module link.
                             In this example, each physical
interface creates 7 ports, therefore up to logical links between
modules can be used
                              in this physical interface */
};
};
node:
name="node1";
ip_address=["192.168.1.1","224.0.0.1"];
                                                   /* Comma-
separated multiple ip's are supported.
                                      Specifying a multi-cast
address is useful for continuous synchronization with several
nodes */
cpu={mops=XXX; mbps=YYY; };
scheduling={type=""; options=""; };
dac=(
     {type="uhd"; address="usrp1"; options=""; }, // This
indicates node1 has physical access to a AD/DA converter.
supported types={"uhd","x5"}
                                   // options string is passed
as a parameter to DAC.create() function. See particular DAC
documentation
     { /* other dacs */ }
   );
```

```
other_options:
                               /* RT-Fault if first module
    { rt_control="soft";
("soft") or last module ("hard") still executing at begin of timeslot
      rt_fault="kill";
                              /* Kill waveform ("kill") or just
print warning message ("print") */
                                /* Kernel timer thread priority
      kernel_prio=60;
(default=90) */
      proc_prio=59;
                                /* processor threads priority
(default=89) */
      /* The following three optional values control the amount
of memory that is preallocated at boot */
      max waveforms=20;
                                    /* (optional) maximum
number of waveform objects that can be used. Default=20 */
      max_modules_x_waveform=20;
                                          /* (optional)
maximum number of module objects per waveform that can be
used. Default=20 */
      max_variables_x_module=20;
                                        /* (optional) maximum
number of variable objects per module that can be used.
Default=20 */
      max_modules_x_node=20;
                                        /* (optional) maximum
number of module objects per node that can be launched.
Default=20 */
                                       /* (optional) maximum
      max_queues_x_node=20;
number of queues per node that are created. Default=20 */
    };
};
node:
              // node2 has IP address 192.168.1.2
name="node2";
ip_address=["192.168.1.2"];
cpu={mops=XXX; mbps=YYY; };
scheduling={type=""; options=""; };
other options { rt control="hard"; rt fault="print"};
synchronization:
    master="node1":
     source="timer";
                         /* Options: "timer" for local timer;
"dac://dac_name" to get clock from dac interrupts (master node
needs access to the dac) */
     continuous mode=TRUE; /* Sends one packet at the
beginning of the timeslot, which drives the slave timeslot clock.
                   /* If FALSE, slaves request synchronization
packet every "period" timeslots */
```

	period=100; /* Synchronization period. Ignored if continuous_mode=FALSE */ multicast=TRUE; /* If platform.manager.sync.proto="udp" and continuous_mode=TRUE, using multicast has better performance. */ }; data_interfaces= ({src="node1"; dst="node2"; bw=10.0; duplex="half"; /* node1 has an output interface to node2. bw is the interface bandwidth in MBPS */	
code_handlers	Database of handlers associated to an Interface	
code_listener	Adds a set of callback-code pairs to an interface. When a new packet arrives, it calls the callback associated to the code that matches the first 32-bit word of the packet. It is used for asynchronous node->manager communication. Basically for statistics reports and execution error notifications.	
node	A node is a collection of processors sharing memory. It may have data interfaces to other nodes. It implements Serializable interface and just copies all attributes	
adata_itf	A physical data interface connects one node with another. This is the interface used by modules data exchange. Implements Serializable interface and just copies/saves attributes in both methods.	
processor	A processing unit inside a Node (e.g. a core in a multi-core system). By definition, it must share memory with other Processors in the Node. Therefore, only one instance of an ALOE-Node object runs on each Node. Implements serialize and unserializeTo methods. Just copies all attributes.	
mapping	This class runs the waveform-to-platform mapping algorithm and stores the result. The mapping procedure is as follows: 1) Create an object instance 2) call to setup() to configure the mapping algorithm 3) call to map(platform,waveform) to map "waveform" object to "platform" object 4) +result is an array of nof_nodes waveforms, one for each waveform. 5) The processorId attribute of every module is filled during map() with the processor id in the node it has been mapped to	

=======

uses : Dependency	
То	hwapi hwapi
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 1:09:09 PM
Last Modified	Oct 5, 2012 1:18:14 PM

Unnamed Import	
То	Common
Visibility	Unspecified
Stereotypes	import
Author	ismael
Create Date Time	Oct 5, 2012 1:36:56 PM
Last Modified	Oct 5, 2012 2:02:19 PM

Common

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Oct 5, 2012 1:36:26 PM
Last Modified	Oct 5, 2012 2:02:19 PM
Visibility	public

Name	Documentation
packet packet	This class generates and reads the contents of a control packet, managing the specific header requirements (in the future, should support different kinds of endianness). The buffer is statically allocated at object creation. Call pkt.add_data() to generate the packet before transmitting the pkt.buffer() buffer of size pkt.size(). At reception, the user must call pkt.read() before using it. The maximum control packet size is 64 Kbytes. Control packets in ALOE include a header with 4 32-bit words: 1) Packet Info 2) Destination Waveform Id 3) Destination Module Id 4) Destination Variable Id

	The first word (Packet info) contains the following information (from LSB to MSB): 1) 07 MANAGER->NODE: Magic word to check if it is a control packet. 0xAF NODE->MANAGER: 0xF0 if command successful or 0x0F if command error. 2) 815 command word (integer, up to 256 commands are supported) 3) 1631 packet size in bytes (integer, up to 65536 bytes can be transferred)
	Data follows after.
packet_commands	Command type constants
serializable	

<u> </u>	
Unnamed Import	
From	A-Manager
Visibility	Unspecified
Stereotypes	import
Author	ismael
Create Date Time	Oct 5, 2012 1:36:56 PM
Last Modified	Oct 5, 2012 2:02:19 PM

Unnamed Import	
From	a_node
Visibility	Unspecified
Stereotypes	import
Author	ismael
Create Date Time	Oct 5, 2012 1:37:00 PM
Last Modified	Oct 5, 2012 2:02:19 PM

a_node

Name	Value
Abstract	false
Leaf	false
Root	false
Author	ismael
Create Date Time	Sep 14, 2012 1:16:55 AM
Last Modified	Oct 5, 2012 2:20:03 PM
Visibility	public

Children

Name	Documentation
node_serializable	
a_node	This is the class that processes the commands coming from the ALOE-Manager.
	The HWAPI runs a background process and creates an object of this class. The HWAPI is responsible to periodically check for incoming messages from the control interface and call the process_cmd() function
dispatcher	
sync	

Relationships

uses : Dependency	
То	hwapi
Visibility	Unspecified
Author	ismael
Create Date Time	Oct 5, 2012 1:09:13 PM
Last Modified	Oct 5, 2012 1:18:14 PM

Unnamed Import	
То	Common
Visibility	Unspecified
Stereotypes	import
Author	ismael
Create Date Time	Oct 5, 2012 1:37:00 PM
Last Modified	Oct 5, 2012 2:02:19 PM

Textual Analysis

Textual Analysis1

Candidate Classes

Basic Diagram

Basic Diagram1

Name	Value
Name	Basic Diagram1
Author	ismael
Create Date Time	Sep 18, 2012 12:33:14 PM
Last Modified	Sep 18, 2012 12:33:26 PM

Details

Brainstorm

IDEES ALOE++



Name	Value
Name	IDEES ALOE++
Author	ismael
Create Date Time	Sep 12, 2012 7:48:27 PM
Last Modified	Oct 5, 2012 6:14:21 PM

Summary

Name	Documentation
CONTROL (VARIABLES) ENTRE MODULS!!! - Si es local el canvi es fa inmediat Si es remot, s'envia una peticio de report amb id=0 el manager ha assignat un handler generic i ha de fer un update de la variable i despres enviarla MOLT LENT!! Interfícies de control entre nodes potser? UNA IDEA POT SER: - Al INIT, un modul declara que voldra visualitzar la variable d'un altre. Llavors, es crea en el manager una memoria que l'altre va actualitzant?	
Tasques: 1) Documentar Classes 2) Sequence: de totes les comandes 3) Manual: del proces d'instalació i configuració (platform.conf, app.conf i carpetes) CAMBIAR TOTS ELS NOMS.	
MES CLAR. NOMÉS MINIUSCULES. FUNDAMENTAL!! NAMING CONVENTION	

Documentation

Details

CONTROL (VARIABLES) ENTRE MODULS!!!

- Si es local el canvi es fa inmediat.
- Si es remot, s'envia una peticio de report amb id=0.
- el manager ha assignat un handler generic i ha de fer un update de la variable i despres enviarla.
- MOLT LENT!! Interfícies de control entre nodes potser? UNA IDEA POT SER:
- Al INIT, un modul declara que voldra visualitzar la variable d'un altre. Llavors, es crea en el manager una memoria que l'altre va actualitzant?

Name	Value
Author	ismael
Create Date Time	Sep 19, 2012 8:08:32 PM
Last Modified	Sep 21, 2012 12:53:37 AM

Tasques:

- 1) Documentar Classes
- 2) Sequence: de totes les comandes
- 3) Manual: del proces d'instalació i configuració (platform.conf, app.conf i carpetes)

Name	Value
Author	ismael
Create Date Time	Sep 12, 2012 8:49:58 PM
Last Modified	Oct 4, 2012 11:01:52 AM

CAMBIAR TOTS ELS NOMS. MES CLAR. NOMÉS MINIUSCULES. FUNDAMENTAL!! NAMING CONVENTION

Name	Value
Author	ismael
Create Date Time	Oct 4, 2012 9:49:19 AM
Last Modified	Oct 4, 2012 9:51:36 AM