

Python and MATLAB API for NATS

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NATS Client API

No.	Modifier and Type	Method and Description
1	EntityInterface	<code>getEntityInterface()</code> Returns a reference to the EntityInterface.
2	EnvironmentInterface	<code>getEnvironmentInterface()</code> Returns a reference to the EnvironmentInterface.
3	EquipmentInterface	<code>getEquipmentInterface()</code> Returns a reference to the EquipmentInterface.
4	SafetyMetricsInterface	<code>getSafetyMetricsInterface()</code> Returns a reference to the SafetyMetricsInterface.
5	SimulationInterface	<code>getSimulationInterface()</code> Returns a reference to the SimulationInterface.

SimulationInterface API

No.	Type	Method and Description
1	void	<code>clear_trajectory()</code> Clean up trajectory data.
2	float	<code>get_curr_sim_time()</code> Get the current simulation timestamp.
3	int	<code>get_runtime_sim_status()</code> Get the runtime status of the trajectory propagation. Value definition: NATS_SIMULATION_STATUS_READY = 0 NATS_SIMULATION_STATUS_START = 1 NATS_SIMULATION_STATUS_PAUSE = 2 NATS_SIMULATION_STATUS_RESUME = 3 NATS_SIMULATION_STATUS_STOP = 4 NATS_SIMULATION_STATUS_ENDED = 5 When the trajectory propagation finishes, the status will be changed to NATS_SIMULATION_STATUS_ENDED.
4	void	<code>pause()</code> Pause the trajectory propagation process.
5	void	<code>resume()</code> Resume the trajectory propagation process.
6	void	<code>resume(long t_duration)</code> Resume the trajectory propagation process and process data for certain seconds of duration time.
7	void	<code>resume(float t_duration)</code> Resume the trajectory propagation process and process data for certain seconds of duration time.

8	int	<p>setupSimulation(long t_total_propagation_period, long t_step) Setup the trajectory propagation.</p> <p>Description of arguments: t_total_propagation_period: Total period of time of propagation in seconds. t_step: Time step in seconds. Value must be larger than zero and less than or equal to 60.</p> <p>Return value: 0 means success. 1 means error.</p>
9	int	<p>setupSimulation(float t_total_propagation_period, float t_step) Setup the trajectory propagation.</p> <p>Description of arguments: t_total_propagation_period: Total period of time of propagation in seconds. t_step: Time step in seconds. Value must be larger than zero and less than or equal to 60.</p> <p>Return value: 0 means success. 1 means error.</p>
10	int	<p>setupSimulation(long t_total_propagation_period, long t_step_surface, long t_step_terminal, long t_step_airborne) Setup the trajectory propagation.</p> <p>Description of arguments: t_total_propagation_period: Total period of time of propagation in seconds. t_step_surface: Time step of surface traffic in seconds. Value must be larger than zero and less than or equal to 60. t_step_terminal: Time step of terminal area traffic in seconds. Value must be larger than zero and less than or equal to 60. t_step_airborne: Time step of traffic(above TRACKON) in seconds. Value must be larger than zero and less than or equal to 60.</p> <p>Return value: 0 means success. 1 means error.</p>
11	int	<p>setupSimulation(float t_total_propagation_period, float t_step_surface, float t_step_terminal, float t_step_airborne) Setup the trajectory propagation.</p> <p>Description of arguments: t_total_propagation_period: Total period of time of propagation in seconds. t_step_surface: Time step of surface traffic in seconds. Value must be larger than zero and less than or equal to 60. t_step_terminal: Time step of terminal area traffic in seconds. Value must be larger than zero and less than or equal to 60. t_step_airborne: Time step of traffic(above TRACKON) in seconds. Value must be larger than zero and less than or equal to 60.</p> <p>Return value: 0 means success. 1 means error.</p>
12	void	<p>start()</p>

		Start the trajectory propagation process.
13	void	start(long t_duration) Start the trajectory propagation and process data for certain seconds of duration time.
14	void	start(float t_duration) Start the trajectory propagation and process data for certain seconds of duration time.
15	void	stop() Stop the trajectory propagation process.
16	void	write_trajectories(String output_file) Write trajectory data into file. File format supported: *.csv, *.kml, *.xml

Simulation Status Enum Values

Values
NATS_SIMULATION_STATUS_READY
NATS_SIMULATION_STATUS_START
NATS_SIMULATION_STATUS_PAUSE
NATS_SIMULATION_STATUS_RESUME
NATS_SIMULATION_STATUS_STOP
NATS_SIMULATION_STATUS_ENDED

EquipmentInterface API

No.	Type	Method and Description
1	AircraftInterface	getAircraftInterface() Returns a reference to the AircraftInterface.

AircraftInterface API

No.	Type	Method and Description
1	int	load_aircraft(String trx_file, String mfl_file) Load aircraft data.
2	int	release_aircraft() Clean up aircraft data.
3	String[]	getAircraftIds(float minLatitude, float maxLatitude, float minLongitude, float maxLongitude, float minAltitude_ft, float maxAltitude_ft) Get qualified aircraft Id which satisfy the min/max range of latitude, longitude and/or altitude.
4	String[]	getAllAircraftId() Get complete aircraft Ids.
5	Aircraft	select_aircraft(String aircraft_id) Get an aircraft object by aircraft Id.
6	int	synchronize_aircraft_to_server(Aircraft aircraft) Push aircraft object to the server and synchronize the data.

		Return value indicating the server operation response. 0 means success. 1 means error.
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Aircraft Instance API

No.	Type	Method and Description
1	int	delay_departure(int seconds) Postpone the departure time of the current aircraft for certain seconds. If the aircraft already departed, the departure time will not be changed.
2	String	getAcid() Get aircraft ID. Example: UA555
3	float	getAltitude_ft() Get current altitude in feet.
4	float	getCruise_alt_ft() Get cruise altitude in feet.
5	float	getCruise_tas_knots() Get cruise speed.
6	float	getDeparture_time_sec() Get departure time in second.
7	float	getDestination_airport_elevation_ft() Get elevation of the destination airport.
8	int	getFlight_phase() Get current flight phase. Flight phase is presented as integer type. Please refer to “Flight Phase Enum Values” for the detail value definition.
9	float[]	getFlight_plan_latitude_array() Get array of latitude of the flight plan.
10	int	getFlight_plan_length() Get number of records of the flight plan.
11	float[]	getFlight_plan_longitude_array() Get array of longitude of the flight plan.
12	String[]	getFlight_plan_waypoint_name_array() Get array of waypoint names of the flight plan.
13	String[]	getFlight_plan_alt_desc_array() Get array of flight plan altitude description.
14	double[]	getFlight_plan_alt_1_array() Get array of flight plan altitude 1.
15	double[]	getFlight_plan_alt_2_array() Get array of flight plan altitude 2.
16	double[]	getFlight_plan_speed_limit_array() Get array of flight plan speed limit.
17	String[]	getFlight_plan_speed_limit_desc_array() Get array of flight plan speed limit description.
18	float	getFpa_rad() Get flight path angle.
19	float	getCourse_rad()

		Get current course.
20	int	getLanded_flag() Get flag value indicating if the aircraft is landed.
21	float	getLatitude_deg() Get current latitude degree.
22	float	getLongitude_deg() Get current longitude degree.
23	float	getOrigin_airport_elevation_ft() Get elevation of the origin airport.
24	float	getRocd_fps() Get rate of climb or descent in feet per second.
25	int	getSector_index() Get current sector index.
26	float	getTarget_altitude_ft() Get target altitude in feet.
27	int	getTarget_waypoint_index() Get array index of the flight plan data of the target waypoint.
28	String	getTarget_waypoint_name() Get target waypoint name.
29	float	getTas_knots() Get current speed.
30	int	getToc_index() Get the flight plan array index of the top-of-climb waypoint.
31	int	getTod_index() Get the flight plan array index of the top-of-descent waypoint.
32	void	setAltitude_ft(float altitude_ft) Set altitude in feet.
33	void	setCruise_alt_ft(float cruise_alt_ft) Set cruise altitude in feet.
34	void	setCruise_tas_knots(float cruise_tas_knots) Set cruise speed.
35	void	setFlight_phase(int flight_phase) Set new value to current flight phase.
36	void	setFlight_plan_latitude_deg(int index, float latitude_deg) Set latitude of the n-th waypoint.
37	void	setFlight_plan_longitude_deg(int index, float longitude_deg) Set longitude of the n-th waypoint.
38	void	setCourse_rad(float course_rad) Set new value to current course.
39	void	setLatitude_deg(float latitude_deg) Set new value to current latitude.
40	void	setLongitude_deg(float longitude_deg) Set new value to current longitude.
41	void	setRocd_fps(float rocd_fps) Set new value of rate of climb or descent in feet per second.
42	void	setTarget_altitude_ft(float target_altitude_ft)

		Set new value to target altitude.
43	void	setTarget_waypoint_latitude_deg(float latitude_deg) Set new value to target waypoint latitude.
44	void	setTarget_waypoint_longitude_deg(float longitude_deg) Set new value to target waypoint longitude.

Flight Phase Enum Values

Values
FLIGHT_PHASE_ORIGIN_GATE
FLIGHT_PHASE_PUSHBACK
FLIGHT_PHASE_RAMP_DEPARTING
FLIGHT_PHASE_TAXI_DEPARTING
FLIGHT_PHASE_RUNWAY_THRESHOLD_DEPARTING
FLIGHT_PHASE_TAKEOFF
FLIGHT_PHASE_CLIMBOUT
FLIGHT_PHASE_HOLD_IN_DEPARTURE_PATTERN
FLIGHT_PHASE_CLIMB_TO_CRUISE_ALTITUDE
FLIGHT_PHASE_TOP_OF_CLIMB
FLIGHT_PHASE_CRUISE
FLIGHT_PHASE_HOLD_IN_ENROUTE_PATTERN
FLIGHT_PHASE_TOP_OF_DESCENT
FLIGHT_PHASE_INITIAL_DESCENT
FLIGHT_PHASE_HOLD_IN_ARRIVAL_PATTERN
FLIGHT_PHASE_APPROACH
FLIGHT_PHASE_FINAL_APPROACH
FLIGHT_PHASE_GO_AROUND
FLIGHT_PHASE_TOUCHDOWN

FLIGHT_PHASE_LAND

FLIGHT_PHASE_EXIT_RUNWAY

FLIGHT_PHASE_TAXI_ARRIVING

FLIGHT_PHASE_RUNWAY_CROSSING

FLIGHT_PHASE_RAMP_ARRIVING

FLIGHT_PHASE_DESTINATION_GATE

FLIGHT_PHASE_LANDED

EnvironmentInterface API

No.	Type	Method and Description
1	void	load_rap(String wind_dir) Load wind RAP file.
2	int	release_rap() Clean up RAP data.
3	AirportInterface	getAirportInterface() Returns a reference to the AirportInterface.
4	TerrainInterface	getTerrainInterface() Returns a reference to the TerrainInterface.
5	TerminalAreaInterface	getTerminalAreaInterface() Returns a reference to the TerminalAreaInterface.
6	WeatherInterface	getWeatherInterface() Returns a reference to the WeatherInterface.

AirportInterface API

No.	Type	Method and Description
1	Airport	select_airport(String airport_code) Get an Airport object instance by a given airport code.
2	String	getArrivalAirport(String acid) Get arrival airport of the requested aircraft.
3	String	getDepartureAirport(String acid) Get departure airport of the requested aircraft.
4	double[]	getLocation(String airport_code) Get latitude and longitude of the requested airport. Return an array containing latitude and longitude.
5	String	getClosestAirport(double latitude, double longitude) Get airport code of the closest airport to the given position.
6	String[]	getAirportsWithinMiles(double lat_deg, double lon_deg, double miles)

		Get all airports within the given location and mile range.
7	String	getFullName(String airportid) Get full airport name of the given airport code.
8	Object[]	getAllRunways(String airport_code) Get all runway of the given airport. The returned data is an array. Each element is an array of: - Runway name - Waypoint Id
9	String[]	getRunwayExits(String airport_code, String runway_id) Get all runway exits of the given airport code and runway id.
10	Object[]	getLayout_node_map(String airport_code) Get mapping of node and sequence number of a given airport. The returned data is an array. Each array element is an array of: - Waypoint node Id - Node sequence number
11	Object[]	getLayout_node_data(String airport_code) Get waypoint node data of a given airport. The returned data is an array. Each array element is an array of: - Node sequence number - Latitude - Longitude
12	Object[]	getLayout_links(String airport_code) Get links of waypoint nodes of a given airport. The returned data is an array. Each array element is an array of: - Node 1 sequence number - Node 2 sequence number
13	String[]	getSurface_taxi_plan(String acid, String airport_code) Get surface taxi plan of the given aircraft Id and airport code. Return Array of all waypoint Ids in the order of visiting.
14	int	generate_surface_taxi_plan(String acid, String airport_code, String startNode_waypoint_id, String endNode_waypoint_id, String runway_name) Generate taxi plan and load it in the program. The function arguments: acid: Aircraft Id airport_code: Airport code startNode_waypoint_id: Starting waypoint Id endNode_waypoint_id: Ending waypoint Id runway_name: Name of runway

		<p>Notice</p> <p>This function doesn't specify V2 or touchdown point as parameters. The propagation process will not include V2 nor touchdown point.</p> <p>Return value</p> <p>0 means success. 1 means error.</p>
15	int	<p>setUser_defined_surface_taxi_plan(String acid, String airport_code, String[] user_defined_waypoint_ids)</p> <p>Set user-defined surface taxi plan and load it in the program.</p> <p>Return value</p> <p>0 means success. 1 means error.</p>
16	String[]	<p>get_taxi_route_from_A_To_B(String acid, String airport_code, String startNode_waypoint_id, String endNode_waypoint_id)</p> <p>Get generate taxi route from waypoint A to B.</p> <p>This function only returns an array of waypoint Ids. No taxi plan will be loaded in the program.</p>
17	String	<p>getDepartureRunway(String acid)</p> <p>Get departure runway of the given aircraft.</p> <p>If the departure taxi plan does not exist, no result will be returned.</p>
18	String	<p>getArrivalRunway(String acid)</p> <p>Get arrival runway of the given aircraft.</p> <p>If the arrival taxi plan does not exist, no result will be returned.</p>
19	double	<p>getTaxi_tas_knots(String acid)</p> <p>Get surface taxi speed in tas knots of the given aircraft.</p>
20	void	<p>setTaxi_tas_knots(String acid, double tas_knots)</p> <p>Set surface taxi speed in tas knots of the given aircraft.</p>

Airport Instance API

No.	Type	Method and Description
1	String	<p>getCode()</p> <p>Get airport code.</p>
2	float	<p>getElevation()</p> <p>Get elevation of the airport in feet.</p>
3	float	<p>getLatitude()</p> <p>Get latitude of the airport.</p>
4	float	<p>getLongitude()</p> <p>Get longitude of the airport.</p>
5	String	<p>getName()</p> <p>Get airport full name.</p>

TerminalAreaInterface API

No.	Type	Method and Description
1	String[]	getAllApproaches(String airport_code) Get all Approach procedures of the given airport.
2	String[]	getAllSids(String airport_code) Get all SID procedures of the given airport.
3	String[]	getAllStars(String airport_code) Get all STAR procedures of the given airport.
4	String	getCurrentApproach(String acid) Get current Approach procedure of the given airport on the given aircraft flight.
5	String	getCurrentSid(String acid) Get current SID procedure of the given airport on the given aircraft flight.
6	String	getCurrentStar(String acid) Get current STAR procedure of the given airport on the given aircraft flight.
7	String[]	getProcedure_leg_names(String proc_type, String proc_name, String airport_code) Get leg names of the given airport code, procedure type and procedure name. Arguments: proc_type: Procedure type. The valid values are only limited to "SID", "STAR" and "APPROACH". proc_name: Name of procedure. airport_code: Airport code.
8	String[]	getWaypoints_in_procedure_leg(String proc_type, String proc_name, String airport_code, String proc_leg_name) Get waypoints of the given airport code, procedure type, procedure name and leg name. Arguments: proc_type: Procedure type. The valid values are only limited to "SID", "STAR" and "APPROACH". proc_name: Name of procedure. airport_code: Airport code. proc_leg_name: Name of procedure leg.
9	double[]	getWaypoint_Latitude_Longitude_deg(String waypoint_name) Get latitude and longitude degree of a given waypoint.
10	double	getProcedure_alt_1(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name) Get alt 1 value of the given airport code, procedure type, procedure name, leg name and waypoint name.
11	double	getProcedure_alt_2(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name) Get alt 2 value of the given airport code, procedure type, procedure name, leg name and waypoint name.
12	double	getProcedure_speed_limit(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name) Get speed limit of the given airport code, procedure type, procedure name, leg

		name and waypoint name.
13	String	getProcedure_alt_desc(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name) Get alt description of the given airport code, procedure type, procedure name, leg name and waypoint name.
14	String	getProcedure_speed_limit_desc(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name) Get speed limit description of the given airport code, procedure type, procedure name, leg name and waypoint name.

TerrainInterface API

No.	Type	Method and Description
1	double	getElevation(double latDeg, double lonDeg) Returns the terrain elevation (in feet above sea level) at the specified latitude and longitude (degrees).
2	double[]	getElevationAreaStats(double minLatDeg, double maxLatDeg, double minLonDeg, double maxLonDeg) Returns an array of coarse statistical information calculated from using terrain elevation(in feet) data for the specified region.
3	double[]	getElevationAreaStatsM(double minLatDeg, double maxLatDeg, double minLonDeg, double maxLonDeg) Returns an array of coarse statistical information calculated from using terrain elevation(in meters) data for the specified region.
4	double	getElevationM(double latDeg, double lonDeg) Returns the terrain elevation (in meters above sea level) at the specified latitude and longitude (degrees).
5	double[]	getElevationMapBounds() Returns the minimum and maximum latitude and longitude bounds of the data used to interpolate elevation data.
6	double[]	getElevationMapBoundsRad() Returns the minimum and maximum latitude and longitude bounds of the data used to interpolate elevation data.
7	int	getElevationMapHeight() Returns the height (in pixels) of the image map which is used to interpolate terrain elevation data.
8	int	getElevationMapWidth() Returns the width (in pixels) of the image map which is used to interpolate terrain elevation data.
9	double	getElevationRad(double latRad, double lonRad) Returns the terrain elevation (in feet above sea level) at the specified latitude and longitude (radians).

EntityInterface API

No.	Type	Method and Description
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1	ControllerInterface	getControllerInterface() Returns a reference to the ControllerInterface.
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ControllerInterface API

No.	Type	Method and Description
1	int	setDelayPeriod(String acid, AircraftClearance aircraft_clearance, int seconds) Set delay period in seconds to a given aircraft clearance.

AircraftClearance Enum Values

Values
AIRCRAFT_CLEARANCE_PUSHBACK
AIRCRAFT_CLEARANCE_TAXI_DEPARTING
AIRCRAFT_CLEARANCE_TAKEOFF
AIRCRAFT_CLEARANCE_ENTER_ARTC
AIRCRAFT_CLEARANCE_DESCENT_FROM_CRUISE
AIRCRAFT_CLEARANCE_ENTER_TRACON
AIRCRAFT_CLEARANCE_APPROACH
AIRCRAFT_CLEARANCE_TOUCHDOWN
AIRCRAFT_CLEARANCE_TAXI_LANDING
AIRCRAFT_CLEARANCE_RAMP_LANDING

Detailed Function Description

NATS Client API

Function: getEntityInterface()

Return Type: EntityInterface

Example:

```
NATSClientFactory = JClass('NATSClientFactory')
natsClient = NATSClientFactory.getNATSClient()
entityInterface = natsClient.getEntityInterface()
```

Function: getEnvironmentInterface()

Return Type: EnvironmentInterface

Example:

```
NATSClientFactory = JClass('NATSClientFactory')
natsClient = NATSClientFactory.getNATSClient()
environmentInterface = natsClient.getEnvironmentInterface()
```

Function: getEquipmentInterface()

Return Type: EquipmentInterface

Example:

```
NATSClientFactory = JClass('NATSClientFactory')
natsClient = NATSClientFactory.getNATSClient()
equipmentInterface = natsClient.getEquipmentInterface()
```

Function: getSafetyMetricsInterface()

Return Type: SafetyMetricsInterface

Example:

```
NATSClientFactory = JClass('NATSClientFactory')
natsClient = NATSClientFactory.getNATSClient()
safetyMetricsInterface = natsClient.getSafetyMetricsInterface()
```

Function: getSimulationInterface()

Return Type: SimulationInterface

Example:

```
NATSClientFactory = JClass('NATSClientFactory')
natsClient = NATSClientFactory.getNATSClient()
simulationInterface = natsClient.getSimulationInterface()
```

SimulationInterface API

Function: clear_trajectory()

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()
simulationInterface.clear_trajectory()
```

Function: get_curr_sim_time()

Return Type: float

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
currentTime = simulationInterface.get_curr_sim_time()
```

Function: get_runtime_sim_status()

Return Type: int

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
currentRuntimeStatus = simulationInterface.get_runtime_sim_status()
```

Function: pause()

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
simulationInterface.pause()
```

Function: resume()

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
simulationInterface.resume()
```

Function: resume(long timeDuration)

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
simulationInterface.resume(1000)
```

Function: resume(float timeDuration)

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
simulationInterface.resume(1000.5)
```

Function: setupSimulation(long propagationTime, long timeStep)

Return Type: int

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
simulationInterface.setupSimulation (10000, 5)
```

Function: setupSimulation(float propagationTime, float timeStep)

Return Type: int

Example:

```
simulationInterface = natsClient.getSimulationInterface()
```

```
simulationInterface.setupSimulation (100.7, 15.5)
```

Function: setupSimulation(long propagationTime, long timeStep, long terminalTimeStep, long airborneTimeStep)

Return Type: int

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.setupSimulation (1000, 3, 4, 5)
```

Function: setupSimulation(float propagationTime, float timeStep, float terminalTimeStep, float airborneTimeStep)

Return Type: int

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.setupSimulation (1000.0, 3.5, 7.5, 10.3)
```

Function: start()

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.start()
```

Function: start(long timeDuration)

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.start(1200)
```

Function: start(float timeDuration)

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.start(150.65)
```

Function: stop()

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.stop()
```

Function: write_trajectories(String outputFile)

Return Type: void

Example:

```
simulationInterface = natsClient.getSimulationInterface()  
simulationInterface.write_trajectories ("SimulationTrajectory.csv")
```

EquipmentInterface API

Function: getAircraftInterface()

Return Type: AircraftInterface

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
```

AircraftInterface API

Function: load_aircraft(String trx_file, String mfl_file)

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraftInterface.load_aircraft("share/tg/trx/TRX_DEMO_SFO_PHX_GateToGate.trx",
"share/tg/trx/TRX_DEMO_SFO_PHX_mfl.trx")
```

Function: release_aircraft()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraftInterface.release_aircraft()
```

Function: getAircraftIds(float minLatitude, float maxLatitude, float minLongitude, float maxLongitude, float minAltitude_ft, float maxAltitude_ft)

Return Type: String[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraftsIds = aircraftInterface.getAircraftId(28.5, 30.7, 72.8, 74.9, 15000.0, 20000.9)
```

Function: getAllAircraftId()

Return Type: String[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraftsIds = aircraftInterface.getAllAircraftId()
```

Function: select_aircraft(String aircraft_id)

Return Type: Aircraft (Aircraft Instance API)

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
```


Function: synchronize_aircraft_to_server(Aircraft aircraft)

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
synchronize_aircraft_to_server(aircraft)
```

AircraftInstance API

Function: delay_departure(int delayTimeSeconds)

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.delay_departure(20)
```

Function: getAcid()

Return Type: String

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraftId = aircraft.getAcid()
```

Function: getAltitude_ft()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraftAltitude = aircraft.getAltitude_ft ()
```

Function: getCruise_alt_ft()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraftCruiseAltitude = aircraft.getCruise_alt_ft()
```

Function: getCruise_tas_knots()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraftCruiseAirspeed = aircraft.getCruise_tas_knots()
```

Function: getDeparture_time_sec()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightDepartureTime = aircraft.getDeparture_time_sec()
```

Function: getDestination_airport_elevation_ft()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
destinationAirportElevation = aircraft.getDestination_airport_elevation_ft()
```

Function: getFlight_phase()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightPhase = aircraft.getFlight_phase()
```

Function: getFlight_plan_latitude_array()

Return Type: float[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightLatitudeArray = aircraft.getFlight_plan_latitude_array()
```

Function: getFlight_plan_length()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightPlanLength = aircraft.getFlight_plan_length()
```

Function: getFlight_plan_longitude_array()

Return Type: float[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightLongitudeArray = aircraft.getFlight_plan_longitude_array()
```

Function: getFlight_plan_waypoint_name_array()

Return Type: String[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightWaypointNameArray = aircraft.getFlight_plan_waypoint_name_array()
```

Function: getFlight_plan_alt_desc_array()

Return Type: String[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightAltitudeDescriptionArray = aircraft.getFlight_plan_alt_desc_array()
```

Function: getFlight_plan_alt_1_array()

Return Type: double[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightPlanAltitude1Array = aircraft.getFlight_plan_alt_1_array()
```

Function: getFlight_plan_alt_2_array()

Return Type: double[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightPlanAltitude2Array = aircraft.getFlight_plan_alt_2_array()
```

Function: getFlight_plan_speed_limit_array()

Return Type: double[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightPlanSpeedLimitArray = aircraft.getFlight_plan_speed_limit_array()
```

Function: getFlight_plan_speed_limit_desc_array()

Return Type: String[]

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightSpeedLimitDescriptionArray = aircraft.getFlight_plan_speed_limit_desc_array()
```

Function: getFpa_rad()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightPathAngle = aircraft.getFpa_rad()
```

Function: getCourse_rad()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
courseAngle = aircraft.getCourse_rad()
```

Function: getLanded_flag()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightLandedFlag = aircraft.getLanded_flag()
```

Function: getLatitude_deg()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightCurrentLatitude = aircraft.getLatitude_deg()
```

Function: getLongitude_deg()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
flightCurrentLongitude= aircraft.getLongitude_deg()
```

Function: getOrigin_airport_elevation_ft()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
originAirportElevation = aircraft.getOrigin_airport_elevation_ft()
```

Function: getRocd_fps()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
rateOfClimbOrDescent = aircraft.getRocd_fps()
```

Function: getSector_index()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
sectorIndex = aircraft.getSector_index()
```

Function: getTarget_altitude_ft()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
targetAltitude = aircraft.getTarget_altitude_ft()
```

Function: getTarget_waypoint_index()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
targetWaypointIndex = aircraft.getTarget_waypoint_index()
```

Function: getTarget_waypoint_name()

Return Type: String

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
targetWaypointName = aircraft.getTarget_waypoint_name()
```

Function: getTas_knots()

Return Type: float

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
currentAirspeed = aircraft.getTas_knots()
```

Function: getToc_index()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
topOfClimbIndex = aircraft.getToc_index()
```

Function: getTod_index()

Return Type: int

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
topOfDescentIndex = aircraft.getTod_index()
```

Function: setAltitude_ft(float altitude_ft)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setAltitude_ft(27500.8)
```

Function: setCruise_alt_ft(float cruise_alt_ft)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setCruise_alt_ft(35000.7)
```

Function: setCruise_tas_knots(float cruise_tas_knots)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setCruise_tas_knots(455.5)
```

Function: setFlight_phase(int flight_phase)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setFlight_phase(2)
```

Function: setFlight_plan_latitude_deg(int index, float latitude_deg)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setFlight_plan_latitude_deg(5, 34.50)
```

Function: setFlight_plan_longitude_deg(int index, float longitude_deg)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setFlight_plan_longitude_deg(5, -122.63)
```

Function: setLatitude_deg(float latitude_deg)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setLatitude_deg(26.58)
```

Function: setLongitude_deg(float longitude_deg)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setLongitude_deg (-122.36)
```

Function: setRocd_fps(float rocd_fps)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setRocd_fps(-50.1)
```

Function: setTarget_altitude_ft(float target_altitude_ft)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setTarget_altitude_ft(35000.5)
```

Function: setTarget_waypoint_latitude_deg(float latitude_deg)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setTarget_waypoint_latitude_deg(35.63)
```

Function: setTarget_waypoint_longitude_deg(float longitude_deg)

Return Type: void

Example:

```
equipmentInterface = natsClient.getEquipmentInterface()
aircraftInterface = equipmentInterface.getAircraftInterface()
aircraft = aircraftInterface.select_aircraft('ULI-SFD235')
aircraft.setTarget_waypoint_longitude_deg(-118.25)
```

EnvironmentInterface API

Function: load_rap(String windDirectory)

Return Type: void

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
environmentInterface.load_rap("share/tg/rap")
```

Function: release_rap()

Return Type: int

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
environmentInterface.release_rap()
```

Function: getAirportInterface()

Return Type: AirportInterface

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
```


Function: getTerrainInterface()

Return Type: TerrainInterface

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
terrainInterface = environmentInterface.getTerrainInterface()
```

Function: getTerminalAreaInterface()

Return Type: TerminalAreaInterface

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
```

Function: getWeatherInterface()

Return Type: WeatherInterface

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
weatherInterface = environmentInterface.getWeatherInterface()
```

AirportInterface API

Function: select_airport(String airport_code)

Return Type: Airport

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
airportInterface = environmentInterface.getAirportInterface()
```

```
airport = airportInterface.select_airport("KPHX")
```

Function: getArrivalAirport(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
airportInterface = environmentInterface.getAirportInterface()
```

```
arrivalAirport = airportInterface.getArrivalAirport('ULI-SFD235')
```

Function: getDepartureAirport(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
airportInterface = environmentInterface.getAirportInterface()
```

```
departureAirport = airportInterface.getDepartureAirport('ULI-SFD235')
```

Function: getLocation(String airport_code)

Return Type: double[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
```

```
airportInterface = environmentInterface.getAirportInterface()
```

```
airportLocation = airportInterface.getLocation('KLAX')
```

Function: getClosestAirport(double latitude, double longitude)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
closestAirport = airportInterface.getClosestAirport(35.2, -118.6)
```

Function: getAirportsWithinMiles(double lat_deg, double lon_deg, double miles)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airports = airportInterface.getAirportsWithinMiles(35.2, -118.6, 22.5)
```

Function: getFullName(String airportid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airportFullName = airportInterface.getFullName('KJFK')
```

Function: getAllRunways(String airport_code)

Return Type: Object[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airportRunways = airportInterface.getAllRunways('PANC')
```

Function: getRunwayExits(String airport_code, String runway_id)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
runwayExits = airportInterface.getRunwayExits('PANC', 'Rwy_01_001')
```

Function: getLayout_node_map(String airport_code)

Return Type: Object[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airportLayoutNodeMap = airportInterface.getLayout_node_map('PHNL')
```

Function: getLayout_node_data(String airport_code)

Return Type: Object[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
```

```
airportLayoutNodeData = airportInterface .getLayout_node_data('PHNL')
```

Function: getLayout_links(String airport_code)

Return Type: Object[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airportLayoutLinks = airportInterface.getLayout_links('PHNL')
```

Function: getSurface_taxi_plan(String acid, String airport_code)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
surfaceTaxiPlan = airportInterface.getSurface_taxi_plan('ULI-SFD235', 'KSFO')
```

Function: generate_surface_taxi_plan(String acid, String airport_code, String startNode_waypoint_id, String endNode_waypoint_id, String runway_name)

Return Type: int

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
generatedTaxiPlan = airportInterface.generate_surface_taxi_plan('ULI-SFD235', 'KSFO',
'Gate_01_001', 'Rwy_02_001', 'RW06L')
```

Function: setUser_defined_surface_taxi_plan(String acid, String airport_code, String[] user_defined_waypoint_ids)

Return Type: int

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
generatedTaxiPlan = airportInterface.setUser_defined_surface_taxi_plan('ULI-SFD235', 'KSFO',
['Gate_01_001', 'Ramp_01_001', 'Txy_01_001', 'Txy_01_002', 'Rwy_02_001'])
```

Function: get_taxi_route_from_A_To_B(String acid, String airport_code, String startNode_waypoint_id, String endNode_waypoint_id)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
taxiPlanAtoB = airportInterface.get_taxi_route_from_A_To_B('ULI-SFD235', 'KSFO',
'Gate_01_001', 'Rwy_02_001')
```

Function: getDepartureRunway(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
departureRunway = airportInterface.getDepartureRunway('ULI-SFD235').
```

Function: getArrivalRunway(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
arrivalRunway = airportInterface.getArrivalRunway('ULI-SFD235')
```

Function: getTaxi_tas_knots(String acid)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
taxiSpeed = airportInterface.getTaxi_tas_knots('ULI-SFD235')
```

Function: setTaxi_tas_knots(String acid, double tas_knots)

Return Type: void

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airportInterface.setTaxi_tas_knots('ULI-SFD235', 25.0)
```

AirportInstance API

Function: getCode()

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airport = airportInterface.select_airport("KORD")
airportCode = airport.getCode()
```

Function: getElevation()

Return Type: float

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airport = airportInterface.select_airport("KORD")
airportElevation = airport.getElevation()
```

Function: getLatitude()

Return Type: float

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airport = airportInterface.select_airport("KORD")
airportLatitude = airport.getLatitude()
```

Function: getLongitude()

Return Type: float

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airport = airportInterface.select_airport("KORD")
airportLongitude = airport.getLongitude()
```

Function: getName()

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
airportInterface = environmentInterface.getAirportInterface()
airport = airportInterface.select_airport("KORD")
airportName = airport.getName()
```

TerminalAreaInterface API

Function: getAllApproaches(String airport_code)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
approaches = terminalAreaInterface.getAllApproaches('KORD')
```

Function: getAllSids(String airport_code)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
sids = terminalAreaInterface.getAllSids('KORD')
```

Function: getAllStars(String airport_code)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
stars = terminalAreaInterface.getAllStars('KORD')
```

Function: getCurrentApproach(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
currentApproach = terminalAreaInterface.getCurrentApproach('ULI-SFD235')
```

Function: getCurrentSid(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
currentSid = terminalAreaInterface.getCurrentSid('ULI-SFD235')
```

Function: getCurrentStar(String acid)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
currentStar = terminalAreaInterface.getCurrentStar('ULI-SFD235')
```

Function: getProcedure_leg_names(String proc_type, String proc_name, String airport_code)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
sidLegNames = terminalAreaInterface.getProcedure_leg_names("SID", "SSTIK3", "KSFO")
```

Function: getWaypoints_in_procedure_leg(String proc_type, String proc_name, String airport_code, String proc_leg_name)

Return Type: String[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
waypointNames = terminalAreaInterface.getWaypoints_in_procedure_leg("SID", "SSTIK3", "KSFO", "PORTE")
```

Function: getWaypoint_Latitude_Longitude_deg(String waypoint_name)

Return Type: double[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
waypointLocation = terminalAreaInterface.getWaypoint_Latitude_Longitude_deg('BOILE')
```

Function: getProcedure_alt_1(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
procedureAlt1 = terminalAreaInterface.getProcedure_alt_1("SID", "SSTIK3", "KSFO", "PORTE",
"KAYEX")
```

Function: getProcedure_alt_2(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
procedureAlt2 = terminalAreaInterface.getProcedure_alt_2("SID", "SSTIK3", "KSFO", "PORTE",
"KAYEX")
```

Function: getProcedure_speed_limit(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
procedureSpeedLimit = terminalAreaInterface.getProcedure_speed_limit("SID", "SSTIK3", "KSFO",
"PORTE", "KAYEX")
```

Function: getProcedure_alt_desc(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
procedureAltitudeDesc = terminalAreaInterface.getProcedure_alt_desc("SID", "SSTIK3", "KSFO",
"PORTE", "KAYEX")
```

Function: getProcedure_speed_limit_desc(String proc_type, String proc_name, String airport_code, String proc_leg_name, String proc_wp_name)

Return Type: String

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terminalAreaInterface = environmentInterface.getTerminalAreaInterface()
procedureSpeedLimitDesc = terminalAreaInterface.getProcedure_speed_limit_desc ("SID", "SSTIK3",
"KSFO", "PORTE", "KAYEX")
```

TerrainInterface API

Function: getElevation(double latDeg, double lonDeg)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevation = terrainAreaInterface.getElevation(34.5, -122.23)
```

Function: getElevationAreaStats(double minLatDeg, double maxLatDeg, double minLonDeg, double maxLonDeg)

Return Type: double[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationAreaStats = terrainAreaInterface.getElevationAreaStats(34.5, -122.23, 36.8, -121.9)
```

Function: getElevationAreaStatsM(double minLatDeg, double maxLatDeg, double minLonDeg, double maxLonDeg)

Return Type: double[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationAreaStatsMeters = terrainAreaInterface.getElevationAreaStatsM(34.5, -122.23, 36.8, -121.9)
```

Function: getElevationM(double latDeg, double lonDeg)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationMeters = terrainAreaInterface.getElevationM(34.5, -122.23)
```

Function: getElevationMapBounds()

Return Type: double[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationMapBounds = terrainAreaInterface.getElevationMapBounds()
```

Function: getElevationMapBoundsRad()

Return Type: double[]

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationMapBoundsRad = terrainAreaInterface.getElevationMapBoundsRad()
```


Function: getElevationMapHeight()

Return Type: int

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationMapHeight = terrainAreaInterface.getElevationMapHeight()
```

Function: getElevationMapWidth()

Return Type: int

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationMapWidth = terrainAreaInterface.getElevationMapWidth()
```

Function: getElevationRad(double latRad, double lonRad)

Return Type: double

Example:

```
environmentInterface = natsClient.getEnvironmentInterface()
terrainAreaInterface = environmentInterface.getTerrainInterface()
elevationRad = terrainAreaInterface.getElevationRad(34.5, -122.23)
```

EntityInterface API

Function: getControllerInterface()

Return Type: ControllerInterface

Example:

```
entityInterface = natsClient.getEntityInterface()
controllerInterface = entityInterface.getControllerInterface()
```

ControllerInterface API

Function: setDelayPeriod(String acid, AircraftClearance aircraft_clearance, int seconds)

Return Type: int

Example:

```
controllerInterface = entityInterface.getControllerInterface()
setDelayPeriod = controllerInterface.setDelayPeriod('ULI-SFD235',
AIRCRAFT_CLEARANCE_TAXI_DEPARTING, 10)
```