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# TACSIT Controller Interface for CMS Systems

Version ~~1.0~~[1](#) - Beta ~~2~~[4](#)

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<http://www.omg.org/spec/TACSIT/20100803>

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This OMG document replaces the ~~submission\_beta\_1~~ document (~~c4i/2010-08-04-dtc/2010-10-11~~, ~~AlphaBeta~~). It is an OMG Adopted Beta Specification and is currently in the finalization phase. Comments on the content of this document are welcome, and should be directed to [issues@omg.org](mailto:issues@omg.org) by February 22, 2012.

You may view the pending issues for this specification from the OMG revision issues web page <http://www.omg.org/issues/>.

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|   |           |
|---|-----------|
| <b>1 Scope .....</b>                                  | <b>1</b>  |
| <b>2 Conformance Criteria .....</b>                   | <b>2</b>  |
| <b>3 Normative References .....</b>                   | <b>2</b>  |
| <b>4 Terms and Definitions .....</b>                  | <b>3</b>  |
| 4.1 General Definitions .....                         | 3         |
| 4.2 Terms specific to this submission .....           | 4         |
| <b>5 Acronyms and Abbreviations .....</b>             | <b>5</b>  |
| <b>6 Additional Information .....</b>                 | <b>5</b>  |
| 6.1 Changes or extensions to OMG specifications ..... | 5         |
| 6.2 Submitters .....                                  | 5         |
| <b>7 Platform Independent Model (PIM) .....</b>       | <b>7</b>  |
| 7.1 Package org.omg.tacsit.controller .....           | 7         |
| <b>7.1.1 Class / Interface Specifications .....</b>   | <b>16</b> |
| 7.1.1.1 Interface Entity .....                        | 16        |
| 7.1.1.2 Interface EntityType .....                    | 18        |
| 7.1.1.3 getTypeName .....                             | 19        |
| 7.1.1.4 Interface Projection .....                    | 19        |
| 7.1.1.5 Class SelectionEvent .....                    | 20        |
| 7.1.1.6 Interface SelectionListener .....             | 21        |
| 7.1.1.7 Interface SelectionManager .....              | 22        |
| 7.1.1.8 Interface TACSITController .....              | 25        |
| 7.1.1.9 Class ViewEyeProperties .....                 | 27        |
| 7.1.1.10 Interface Viewport .....                     | 28        |
| 7.1.1.11 ClassViewportChangeEvent .....               | 31        |
| 7.1.1.12 Interface ViewportChangeListener .....       | 32        |
| 7.1.1.13 Interface ViewportManager .....              | 33        |
| 7.1.1.14 Interface ViewportManagerEvent .....         | 35        |
| 7.1.1.15 InterfaceViewportManagerListener .....       | 36        |
| 7.1.1.16 EnumerationSelectionMethodology .....        | 37        |
| 7.1.1.17 EnumerationSelectionType .....               | 37        |
| 7.2 Package org.omg.tacsit.query .....                | 38        |
| <b>7.2.1 Class / Interface Specifications .....</b>   | <b>38</b> |
| 7.2.1.1 Interface ContainmentQuery .....              | 38        |
| 7.2.1.2 Interface EntityQuery .....                   | 39        |
| 7.2.1.3 Interface EntityTypeQuery .....               | 39        |
| 7.2.1.4 Interface GeometryQuery .....                 | 40        |
| 7.2.1.5 Interface IntersectionQuery .....             | 41        |
| 7.2.1.6 InterfaceQueryManager .....                   | 41        |



|   |           |
|---|-----------|
| 7.3 Package org.omg.tacsit.geometry .....           | 42        |
| <b>7.3.1 Class / Interface Specifications .....</b> | <b>42</b> |
| 7.3.1.1 Interface Geometry .....                    | 42        |
| 7.3.1.2 Interface GeodeticPosition .....            | 43        |
| 7.3.1.3 Class ScreenPosition .....                  | 44        |
| 7.3.1.4 Interface Centered .....                    | 45        |
| 7.3.1.5 Interface Circle .....                      | 46        |
| 7.3.1.6 Rectangle .....                             | 47        |
| <b>8 Java Platform Specific Model .....</b>         | <b>49</b> |
| <b>9 C++ Platform Specific Model .....</b>          | <b>51</b> |

# Preface

## About the Object Management Group

### OMG

Founded in 1989, the Object Management Group, Inc. (OMG) is an open membership, not-for-profit computer industry standards consortium that produces and maintains computer industry specifications for interoperable, portable, and reusable enterprise applications in distributed, heterogeneous environments. Membership includes Information Technology vendors, end users, government agencies, and academia.

OMG member companies write, adopt, and maintain its specifications following a mature, open process. OMG's specifications implement the Model Driven Architecture® (MDA®), maximizing ROI through a full-lifecycle approach to enterprise integration that covers multiple operating systems, programming languages, middleware and networking infrastructures, and software development environments. OMG's specifications include: UML® (Unified Modeling Language™); CORBA® (Common Object Request Broker Architecture); CWMTM (Common Warehouse Metamodel); and industry-specific standards for dozens of vertical markets.

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- MOF
- XMI
- CWM
- Profile specifications

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- CORBA/IIOP
- IDL/Language Mappings
- Specialized CORBA specifications
- CORBA Component Model (CCM)

## Platform Specific Model and Interface Specifications

- CORBA services
- CORBA facilities
- OMG Domain specifications
- OMG Embedded Intelligence specifications
- OMG Security specifications

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The type styles shown below are used in this document to distinguish programming statements from ordinary English. However, these conventions are not used in tables or section headings where no distinction is necessary.

Times/Times New Roman - 10 pt.: Standard body text

**Helvetica/Arial - 10 pt. Bold:** OMG Interface Definition Language (OMG IDL) and syntax elements.

**Courier - 10 pt. Bold:** Programming language elements.

Helvetica/Arial - 10 pt: Exceptions

**Note** – Terms that appear in *italics* are defined in the glossary. Italic text also represents the name of a document, specification, or other publication.

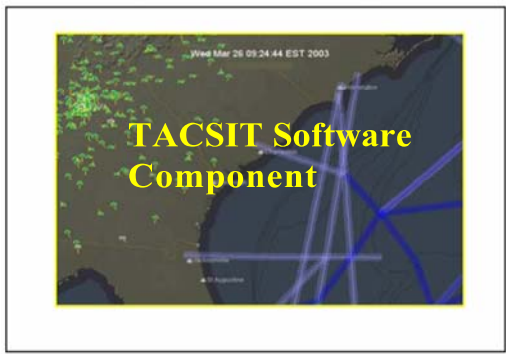
## Issues

The reader is encouraged to report any technical or editing issues/problems with this specification to <http://www.omg.org/technology/agreement.htm>.

# 1 Scope

The domain of Combat Management Systems is characterized by a huge variety of underlying computing platforms, with different and often incompatible means of providing interactive displays. Standards-based services are essential for interoperable and open systems.

There is fairly broad agreement of what is considered the TACSIT software component of a tactical / strategic display system. The TACSIT component is the software that provides users awareness of entities in the operational space relative to a certain geo-spatial context. The TACSIT, by its nature, displays entities called tracks in their proper geographic location overlaid on a visual representation of a map while including additional annotations and decision aides to support the operator. The TACSIT is distinct from other display applications that work around, or in conjunction with it. The figure below provides an example of the TACSIT software component.



**Figure 1.1 - Example of a TACSIT software component**

There are many capabilities and services necessary to successfully implement a TACSIT software component.

Within this broader context of TACSIT services, there are several aspects to be considered such as Controllers, Maps, Tracks, Geometric, and Configuration. This specification is targeted at the Controller services necessary for TACSIT software component manipulation only. Controller Services provide a means to interact with the TACSIT software component and receive TACSIT notifications. Some general examples of Controller Services capability include such functionalities as range scaling, setting the area center/offset, setting view rotation, selecting objects, registering for events, and receiving cursor location updates.

This document specifies a standard for TACSIT Controller software services in CMS systems, consisting of a standard means of interacting with TACSIT software components.

The context of this TACSIT Controller service is defined in the following figure and associated text:

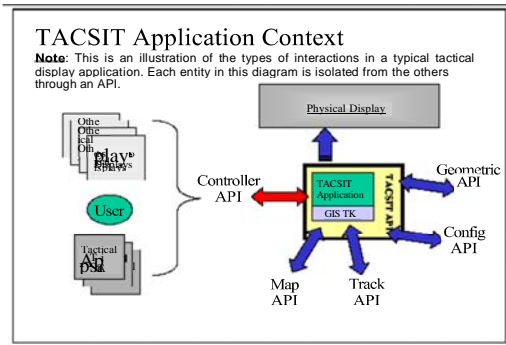


Figure 1.2 - TACSIT Application Context

This specification focuses on the interfaces necessary for software applications to interact with the TACSIT application, to modify the state of the TACSIT configuration, and to listen for relevant state changes that occur within the TACSIT (often as a result of user interaction).

## 2 Conformance Criteria

Implementations of this standard are ~~considered~~ considered to be in conformance if they completely match one or more of the language level PSMs specified. The implementation must indicate the ~~language~~ language PSM(s) that they match in their statement of conformance.

Comment [MW1]: Changed in accordance with issue: 15794

## 3 Normative References

The team considered the OGC “OpenGIS® Implementation Specification for Geographic information - Simple feature access - Part 1: Common architecture” (Doc: OGC 06-103r3; Version: 1.2.0; Date: 2006-10-05) in that:

- This OMG specification does not conflict with the OGC specification and uses the same names for types and methods where possible.
- This OMG Specification does not require a Geometry to completely implement the OGC specification.
- The OGC specification is considerably more involved and complex than the requirements for this standard therefore we have specified a simple Geometry class for this specification.

## 4 Terms and Definitions

### 41 General Definitions

Architecture Board (AB) - The OMG plenary that is responsible for ensuring the technical merit and MDA-compliance of RFPs and their submissions.

Board of Directors (BoD) - The OMG body that is responsible for adopting technology.

Common Object Request Broker Architecture (CORBA) - An OMG distributed computing platform specification that is independent of implementation languages.

Common Warehouse Metamodel (CWM) - An OMG specification for data repository integration.

CORBA Component Model (CCM) - An OMG specification for an implementation language independent distributed component model.

Interface Definition Language (IDL) - An OMG and ISO standard language for specifying interfaces and associated data structures.

Letter of Intent (LOI) - A letter submitted to the OMG BoD's Business Committee signed by an officer of an organization signifying its intent to respond to the RFP and confirming the organization's willingness to comply with OMG's terms and conditions, and commercial availability requirements.

Mapping - Specification of a mechanism for transforming the elements of a model conforming to a particular metamodel into elements of another model that conforms to another (possibly the same) metamodel.

Metadata - Data that represents models. For example, a UML model; a CORBA object model expressed in IDL; and a relational database schema expressed using CWM.

Metamodel - A model of models.

Meta Object Facility (MOF) - An OMG standard, closely related to UML, that enables metadata management and language definition.

Model - A formal specification of the function, structure and/or behavior of an application or system.

Model Driven Architecture (MDA) - An approach to IT system specification that separates the specification of functionality from the specification of the implementation of that functionality on a specific technology platform.

Normative - Provisions that one must conform to in order to claim compliance with the standard. (as opposed to non-normative or informative which is explanatory material that is included in order to assist in understanding the standard and does not contain any provisions that must be conformed to in order to claim compliance).

Normative Reference - References that contain provisions that one must conform to in order to claim compliance with the standard that contains said normative reference.

Platform - A set of subsystems/technologies that provide a coherent set of functionality through interfaces and specified usage patterns that any subsystem that depends on the platform can use without concern for the details of how the functionality provided by the platform is implemented.

Platform Independent Model (PIM) - A model of a subsystem that contains no information specific to the platform, or the technology that is used to realize it.



Platform Specific Model (PSM) - A model of a subsystem that includes information about the specific technology that is used in the realization of it on a specific platform, and hence possibly contains elements that are specific to the platform.

Request for Information (RFI) - A general request to industry, academia, and any other interested parties to submit information about a particular technology area to one of the OMG's Technology Committee subgroups.

Request for Proposal (RFP) - A document requesting OMG members to submit proposals to the OMG's Technology Committee. Such proposals must be received by a certain deadline and are evaluated by the issuing task force.

Task Force (TF) - The OMG Technology Committee subgroup responsible for issuing a RFP and evaluating submission(s).

Technology Committee (TC) - The body responsible for recommending technologies for adoption to the BoD. There are two TCs in OMG - Platform TC (PTC), that focuses on IT and modeling infrastructure related standards; and Domain TC (DTC), that focus on domain specific standards.

Unified Modeling Language (UML) - An OMG standard language for specifying the structure and behavior of systems. The standard defines an abstract syntax and a graphical concrete syntax.

UML Profile - A standardized set of extensions and constraints that tailors UML to particular use.

XML Metadata Interchange (XMI) - An OMG standard that facilitates interchange of models via XML documents.

## 4.2 Terms specific to this submission

The RFP prompting this response defined the following set of standard terminology which will henceforth be used within this document:

- TACSIT - A Tactical Situation Display software component that provides a display of relevant tactical information over and in conjunction with the geographic context of the information.
- Track - A spatial object that is managed within the CMS, such as local radar contacts, radar contacts provided via external messages, tactical data points, waypoints, etc.
- Viewport - The area of visible geography displayed in the TACSIT window.
- Hook Event - The selection of a track on the TACSIT. The words "selected" and "hooked" are used interchangeably within this document.
- Primary Hook - The predominant hooked track on the TACSIT.
- Secondary Hook - An alternate or subordinate hooked track on the TACSIT.
- Pre-Hook - The case where the pointer is moved over a track, but no selection / hook action has been initiated by the operator or the CMS. This condition presumes a particular human interface that includes the use of a pointing device.
- CMS - Combat Management System - The software systems and services used in providing command and control services to a system.
- C4I - A term used in military and command situations that is an abbreviation for Command, Control, Computers, Communications, and Intelligence.

## 5 Acronyms and Abbreviations

**Table 5.1 - Acronyms and Abbreviations**

|        |   |
|--------|---|
| CMS    | (Naval) Combat Management System          |
| CORBA  | Common Object Request Broker Architecture |
| TACSIT | Tactical Situation (Display)              |
| HTTP   | HyperText Transfer Protocol               |
| OMG    | Object Management Group                   |
| RFP    | Request For Proposal                      |
| UML    | Unified Modelling Language                |
| XML    | eXtensible Mark-up Language               |

## 6 Additional Information

### 6.1 Changes or extensions to OMG specifications

No changes to UML 2.0 or other OMG specifications are required.

### 6.2 Submitters

- BAE Systems plc
- LUCIAD
- SimVentions Inc



## 7 Platform Independent Model (PIM)

The PIM consists of the following logical packages:

- TACSIT Controller Interface (org.omg.tacsit.controller)
- TACSIT Query (org.omg.tacsit.query)
- TACSIT Geometry (org.omg.tacsit.geometry)

### 7.1 Package org.omg.tacsit.controller

The TACSIT Controller package contains most of the major interfaces of this specification. They are categorized in three logical groups: Top Level, Selection, and Viewport.

#### Top Level Interfaces and Relationships

The top level interface for this specification is the TACSITController interface. It provides the primary façade for working with the services herein. The following class diagram shows the relationship between the TACSITController façade and the various manager interfaces used to implement the functionality of this specification.

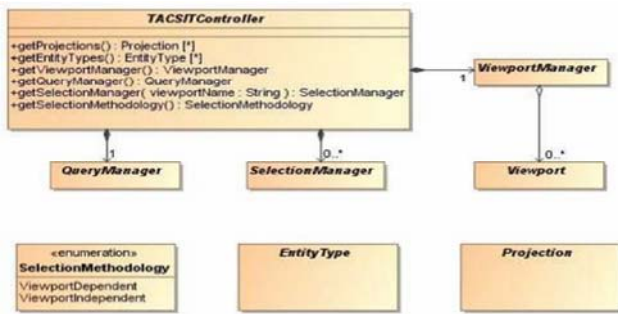


Figure 7.1 - Top Level Interfaces

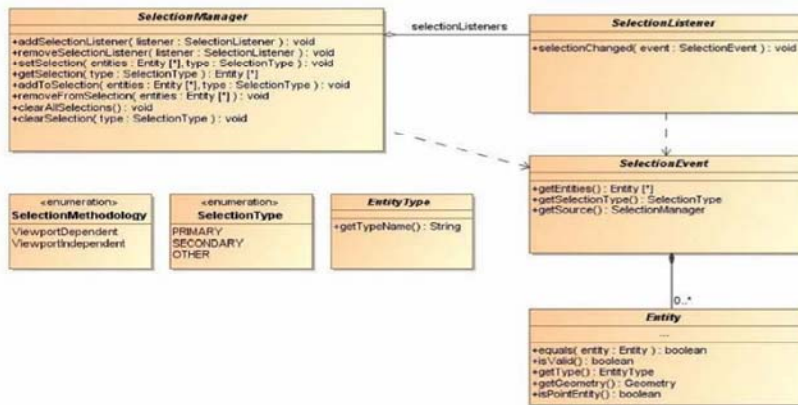
For a detailed description of these classes, see the definitions outlined in section [6.3.27.1.1](#).

Comment [MW2]: Changed in accordance with issue: 15795

#### Selection Interfaces and Relationships

The selection functionality of this [standard](#) is contained in the org.omg.tacsit.controller package. They provide the interfaces for working with the selected item in the TACSIT. The following class diagram shows the relationship between the various interfaces used to implement the functionality of this portion of the specification.

Comment [MW3]: Changed in accordance with issue: 15796



**Figure 7.2 - Selection Interfaces**

These interfaces are designed to support the common selection requirements involved in a TACSIT system.

These interfaces support the ability to get and set the currently selected item (primary and secondary) via API call. There are two “reserved” named selections (hooks), primary and secondary, corresponding to SelectionTypes PRIMARY and SECONDARY. Using these interfaces provides considerable flexibility in managing the selected items and allows for the following functionality.

- Select by entity / track number (TN), with the ability to specify the type or category of TN (as many CMS support multiple categories of TN per track such as System TN, Link TN, etc.).
- Select tracks within a geographic geometry such as a bounding box.
- Select tracks at a geographic point where the parameters allow for selection of the closest track(s) within a radius of the specified point.
- Select tracks with particular attribute(s) such as (Surface, Hostile, Frigate).

The following sequence patterns demonstrate how to perform these functions. These patterns support working with single entities and groups of entities.

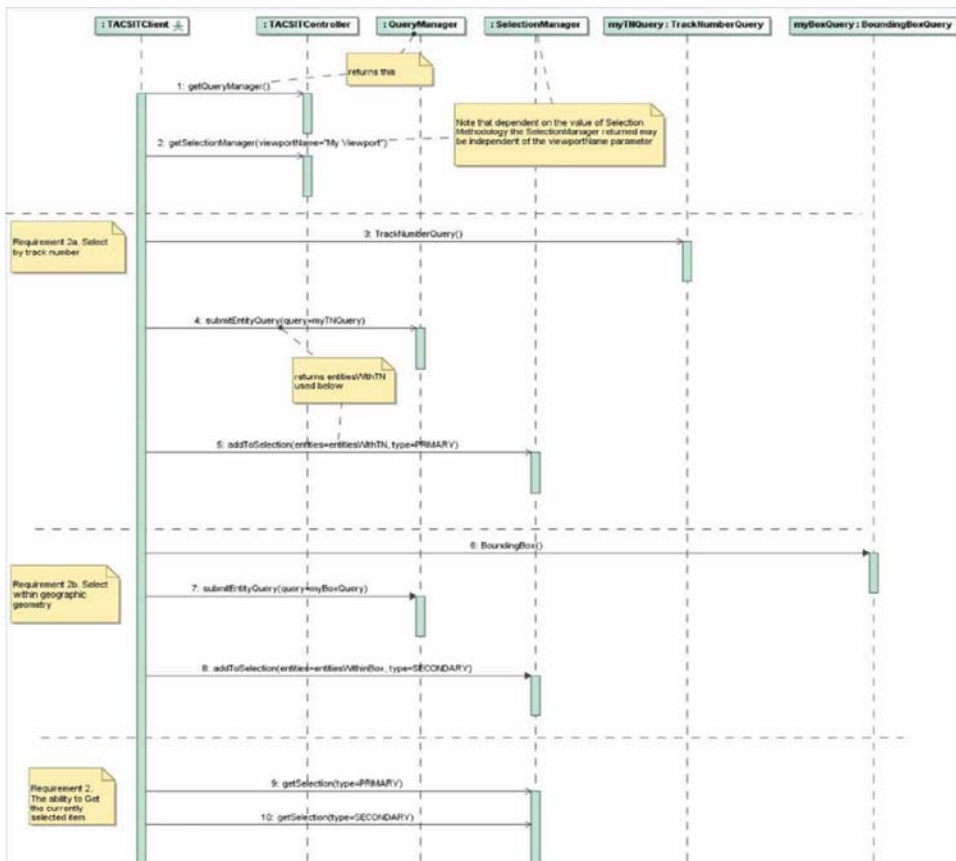
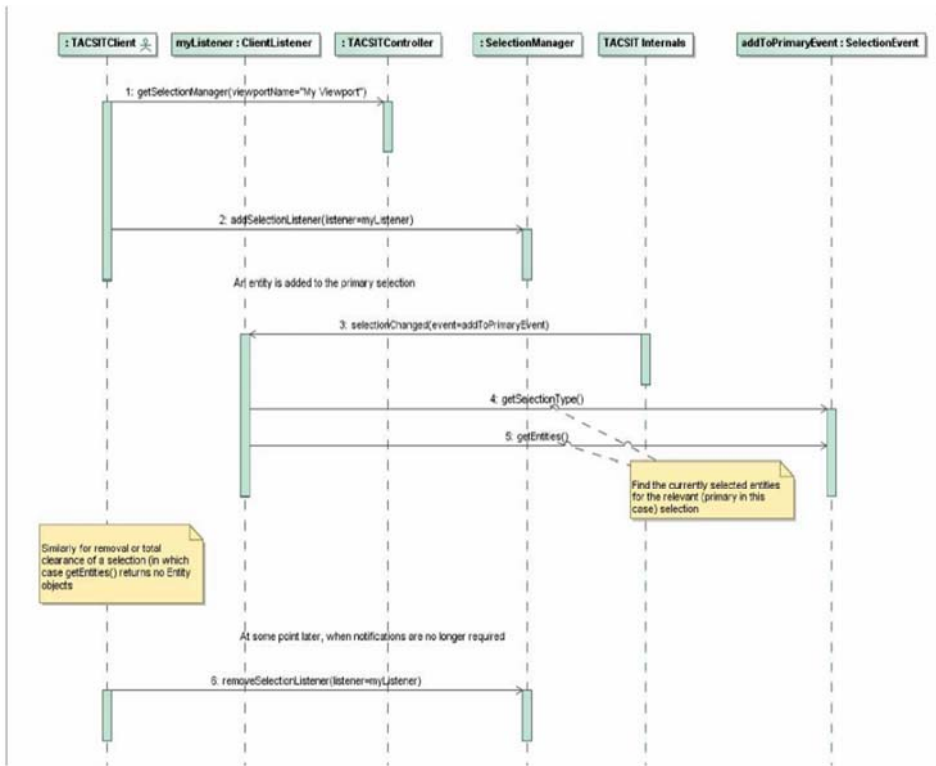


Figure 7.3 -

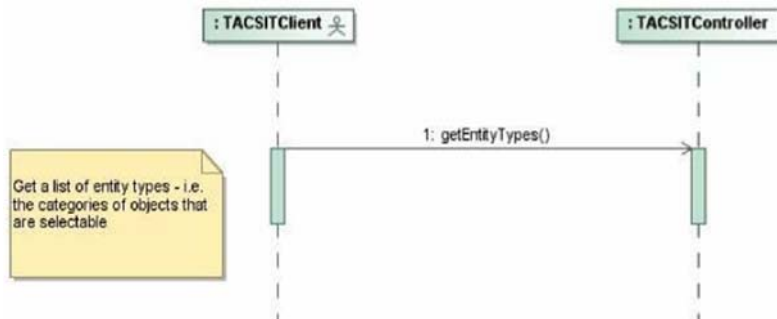
To remove objects (including tracks) from the current selection follow the sequence diagram below. You may remove all objects, a single object, multiple objects, and all objects with a particular attribute.

- A method to accomplish this is shown in the sequence diagram below.



**Figure 7.4 -**

These interfaces allow you to get and set the category(ies) of selectable items and specify the categories of objects that are selectable (e.g. vehicular, non-vehicular tracks, countries, overlays, tactical points, reference points, waypoints, etc.).



### Viewport Interfaces and Relationships

These interfaces are designed to support the common viewport requirements involved in a TACSIT system.

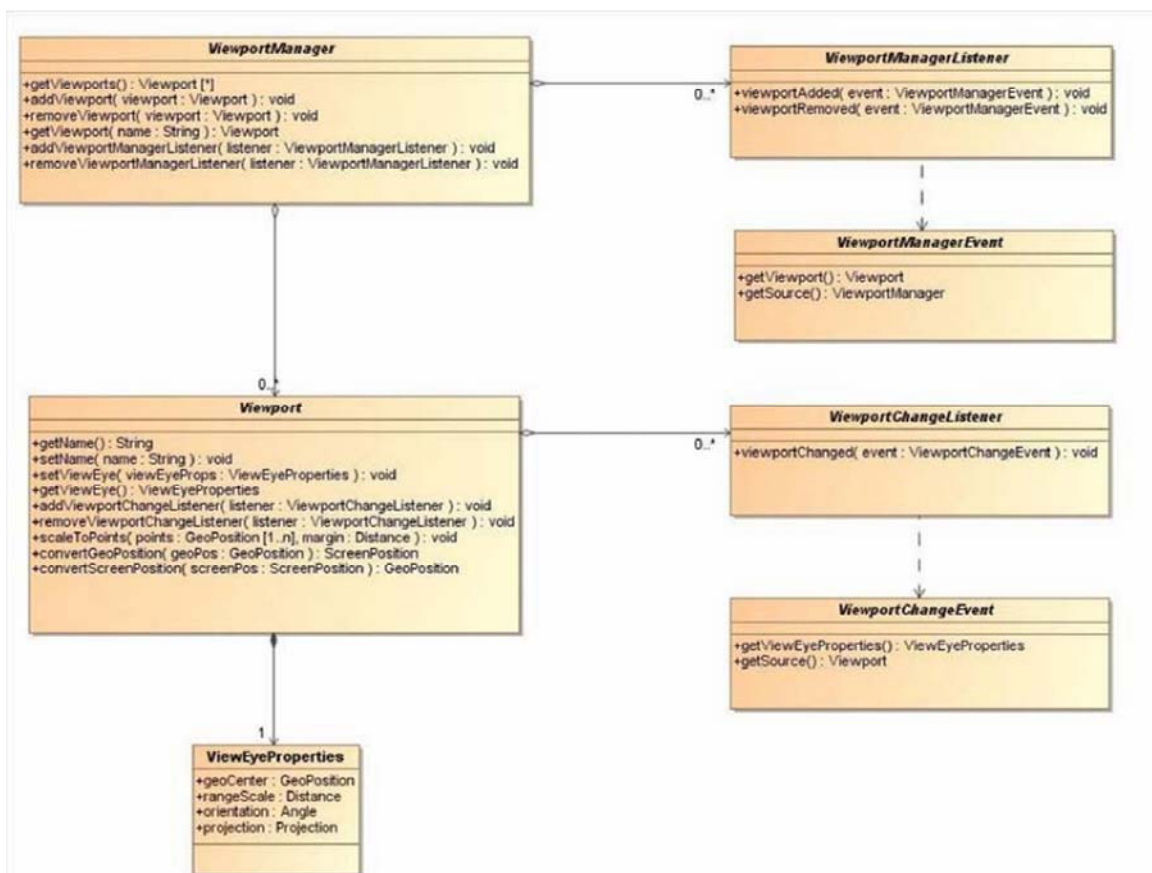
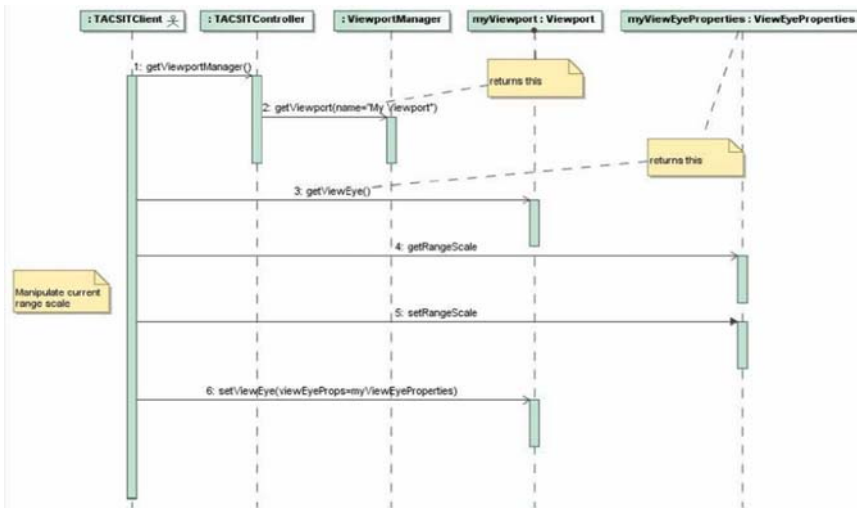


Figure 7.5 - Viewport Interfaces



These interfaces are designed to support the common viewport related requirements involved in a TACSIT system. These interfaces support the ability to manage the current view of the TACSIT. The following section describes the functionality provided.

To get and set the current range scale (distance from center to nearest edge).



Get and set the viewport range boundaries (within the TACSIT window) by specifying two geographic points (Point 1, Point 2) and a distance buffer outside 1 and 2.

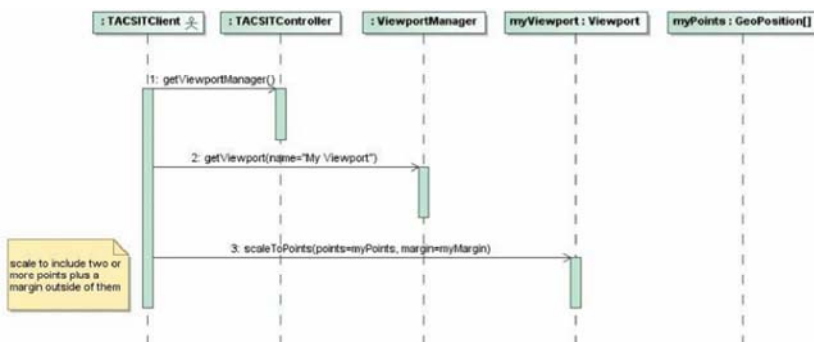


Figure 7.6 -

Get and set the current display center specified as geographic position.

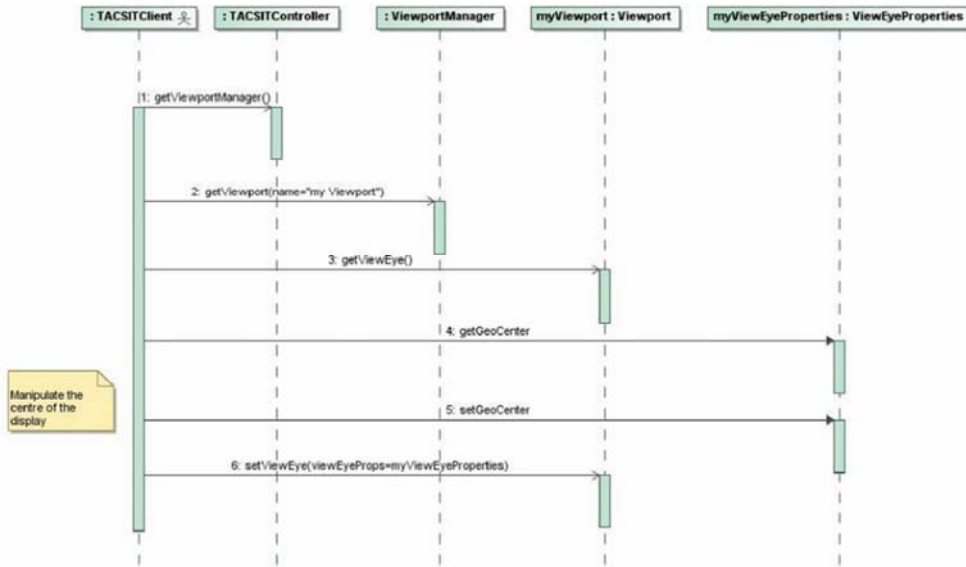
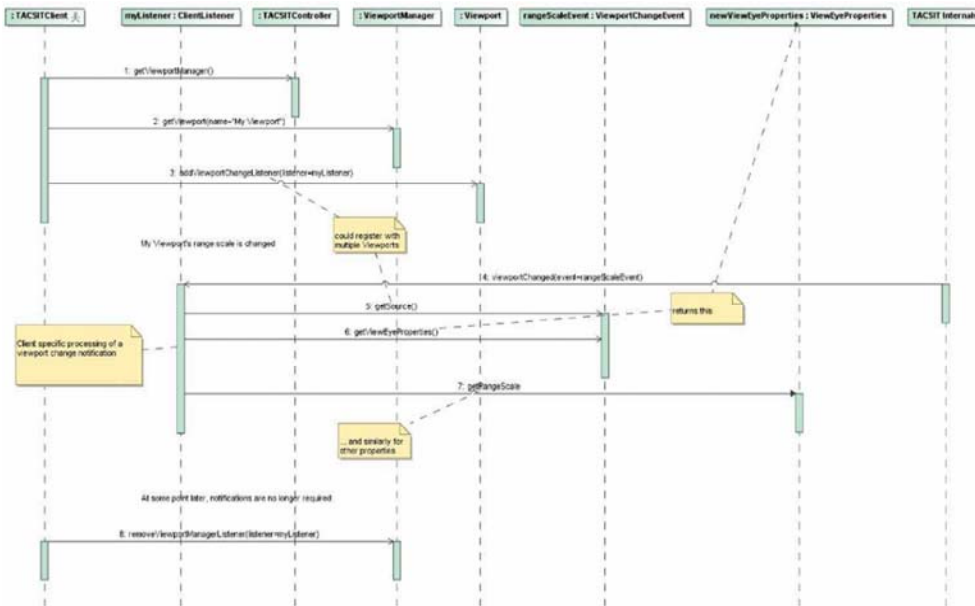


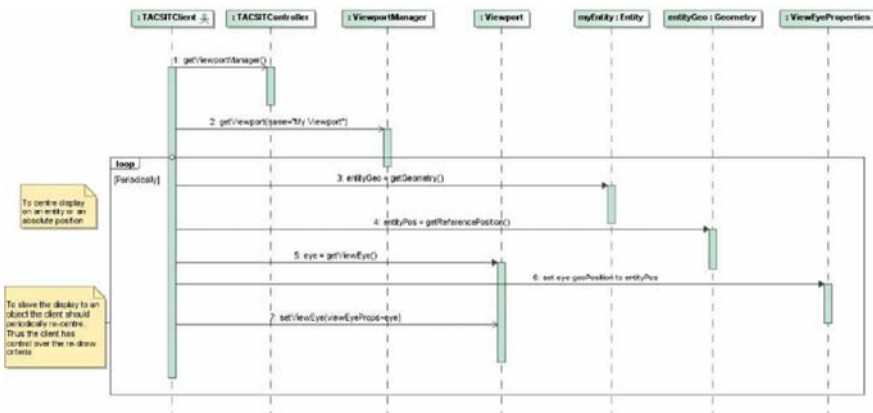
Figure 7.7 -

You can register listeners for changes in the TACSIT viewport extents including range scale, center.



**Figure 7.8 -**

Set the center of the TAC SIT display to an object. If your system requires the center to be consistently updated with the movement with a particular entity, you must periodically (based on your own timing and performance requirements) call these methods as required.



**Figure 7.9 -**

Get and set the geographic projection used for a particular Viewport. To get a list of available projections call the method in the TACSITController class. This provides a simple list of objects that give the names of the projections supported by the service. You may then use this object to set the projection desired in your viewport.

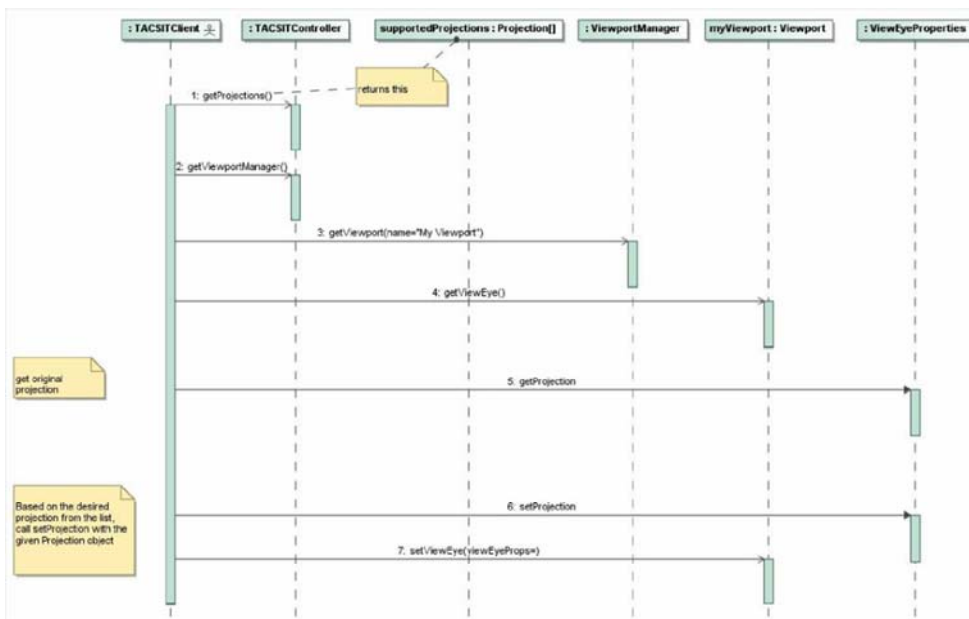


Figure 7.10 -

### 7.1.1 Class / Interface Specifications

The following provides a detailed description of the interface classes in the query package.

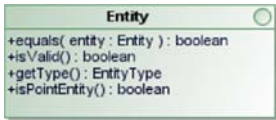
#### 7.1.1.1 Interface Entity

The Entity class is an abstraction of the tactical objects that can be displayed on a Tactical Situation display (TacSit).

The Entity interface specifies the basic methods of interaction between the TACSIT system and the custom clients. Each application uses their own specific objects for Tracks, items of interest, etc and they implement the Entity interface. While not specified in this specification, it is assumed that these types of Entity objects are the ones “added” by the application to the TACSIT to be visualized. Having this Entity interface allows both the TACSIT Controller implementation and the user-system to share tracks and other “real-world” objects.

Entities are modeled such that it is possible for clients to establish their own specific type and geometry and hence proceed to interact with them in an application specific manner.

Entities need to be able to indicate if they are still valid: even though they may have been part of a selection at a certain point in time, by the time that the entities of that selection are accessed the entities may not exist any more in reality.



**Figure 7.11 - Entity**

|                 |  |
|-----------------|--|
| Name            | Entity                                   |
| Qualified Name  | org: :omg: :tacsit: :controller: :Entity |
| Visibility      | public                                   |
| Base Classifier |  |

**7.1.1.1.1 equals**

Returns true if the given Entity corresponds to this Entity (i.e., the Tactical Objects are the same).

|             |                    |
|-------------|--------------------|
| Type        | boolean            |
| Visibility  | public             |
| Is Abstract | false              |
| Parameter   | in entity : Entity |

**7.1.1.1.2 getType**

Returns the type of the Entity. This corresponds to the application specific class of the tactical object that has been added to the TacSit.

|             |            |
|-------------|------------|
| Type        | EntityType |
| Visibility  | public     |
| Is Abstract | false      |
| Parameter   |            |

**7.1.1.1.3 isPointEntity**

This is a convenience method for indicating whether the entity is to be handled as though it is a “single” point rather than a complex geometry. This is useful for containment and other queries.

|             |         |
|-------------|---------|
| Type        | boolean |
| Visibility  | public  |
| Is Abstract | false   |
| Parameter   |         |

|             |         |
|-------------|---------|
| Type        | boolean |
| Visibility  | public  |
| Is Abstract | false   |
| Parameter   |         |

|             |         |
|-------------|---------|
| Type        | boolean |
| Visibility  | public  |
| Is Abstract | false   |
| Parameter   |         |

**7.1.1.1.4 isValid**

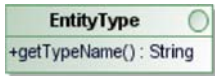
Returns true if this instance is valid.

|             |         |
|-------------|---------|
| Type        | boolean |
| Visibility  | public  |
| Is Abstract | false   |
| Parameter   |         |

**7.1.1.2 Interface EntityType**

An EntityType represents the type of an Entity that is handled by the Tacsit.

An EntityType is an implicit grouping of Entities according to their characteristics in reality (e.g., Track, Airfield, Country, etc.)



**Figure 7.12 - Entity Type**

|                 |  |
|-----------------|--|
| Name            | EntityType                                   |
| Qualified Name  | org: :omg: :tacsit: :controller: :EntityType |
| Visibility      | public                                       |
| Base Classifier |  |

### 7.1.1.3 getTypeName

Returns the display name of this EntityType.

|             |        |
|-------------|--------|
| Type        | String |
| Visibility  | public |
| Is Abstract | false  |
| Parameter   |        |

### 7.1.1.4 Interface Projection

A projection is a method of mapping the curvi-linear 3D geometry of the Earth's surface to a 2D TACSIT Viewport (i.e., a Map Projection).

For the purpose of the Tacsit Controller interface projections are only needed to refer to by name.

Each "Toolkit" is free to provide whatever projections it supports. This interface provides the users access to the individually supported projections without having to specify or understand the details of how they are implemented. For projection details (such as projection parameters) toolkit specific provisions are foreseen.

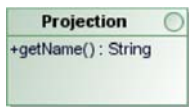


Figure 7.13 - Projection

|                 |   |
|-----------------|---|
| Name            | Projection                                  |
| Qualified Name  | org :omg: :tacsit: :controller: :Projection |
| Visibility      | public                                      |
| Base Classifier |   |

#### 7.1.1.4.1 getName

Returns the name of this Projection.

|             |        |
|-------------|--------|
| Type        | String |
| Visibility  | public |
| Is Abstract | false  |
| Parameter   |        |



### 7.1.1.5 Class SelectionEvent

SelectionEvent is the type of event that is passed to a SelectionListener each time there is a change in one of the selections of a SelectionManager.



Figure 7.14 - SelectionEvent

|                    |   |
|--------------------|---|
| Name               | SelectionEvent                                  |
| Qualified Name     | org :omg: :tacsit: :controller: :SelectionEvent |
| Visibility         | public  |
| Abstract           | false   |
| Base Classifier    |   |
| Realized Interface |   |

#### 7.1.1.5.1 getEntities

Returns the list of entities involved in this selection event.

|             |        |
|-------------|--------|
| Type        | Entity |
| Visibility  | public |
| Is Abstract | false  |
| Parameter   |        |

#### 7.1.1.5.2 getSelectionType

Returns the type of selection that has changed.

|             |               |
|-------------|---------------|
| Type        | SelectionType |
| Visibility  | public        |
| Is Abstract | false         |
| Parameter   |               |

### 7.1.1.5.3 getSource

Returns the SelectionManager in which the selection change occurred.

|             |                  |
|-------------|------------------|
| Type        | SelectionManager |
| Visibility  | public           |
| Is Abstract | false            |
| Parameter   |                  |

### 7.1.1.5.4 SelectionEvent

A constructor to build and fill the attributes of the SelectionEvent.

|             |  |
|-------------|--|
| Type        | Constructor  |
| Visibility  | public   |
| Is Abstract | false  |
| Parameter   | <ul style="list-style-type: none"><li>• in entities : Entity [0..*]</li><li>• inout source : SelectionManager</li><li>• inout type : SelectionType</li></ul> |

### 7.1.1.6 Interface SelectionListener

SelectionListener is the type of object that is notified by a SelectionManager where it is registered in case of a change in one of the selections of that SelectionManager.



Figure 7.15 - SelectionListener

|                 |   |
|-----------------|---|
| Name            | SelectionListener                                     |
| Qualified Name  | org : :omg: :tacsit: :controller: : SelectionListener |
| Visibility      | public  |
| Base Classifier |   |

### 7.1.1.6.1 selectionChanged

This method is called by the SelectionManagers where this SelectionListener is registered in case a selection changed for that SelectionManager. The details of which selection changed and which elements are still in the selection can be obtained through the given SelectionEvent.

|             |                             |
|-------------|-----------------------------|
| Type        | void                        |
| Visibility  | public                      |
| Is Abstract | false                       |
| Parameter   | • in event : SelectionEvent |

### 7.1.1.7 Interface SelectionManager

The selection manager is the entry point for managing the selections of the Tacsit controller.

Multiple selections can be managed using the selection manager. Each selection has a specific selection type. Selection types are predefined. Each selection is managed as a list of the type Entity. Each element can only occur once in the selection and the order of the elements in the selection is not determined.

Managing a selection through the selection manager means that the selection manager allows retrieving and modifying each of the selections. It also allows users to register and unregister selection listeners which will be notified in case of a change in a selection.

The scope of the SelectionManager is determined by the SelectionMethodology of the Tacsit controller.

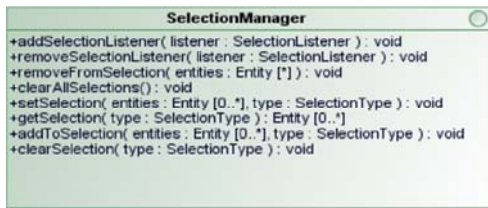


Figure 7.16 - SelectionManager

|                 |   |
|-----------------|---|
| Name            | SelectionManager                                    |
| Qualified Name  | org: :omg: :tacsit: :controller: : SelectionManager |
| Visibility      | public  |
| Base Classifier |   |

#### 7.1.1.7.1 addSelectionListener

Registers the given SelectionListener to this SelectionManager.

After registration the SelectionListener will be notified through its only method each time that a change occurs in one of the selections managed by this SelectionManager. Registering a SelectionListener that was already registered with this SelectionManager therefore does not have any effect.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>• in listener : SelectionListener</li> </ul> |

#### 7.1.1.7.2 addToSelection

Adds all elements of the given array of Entities to the selection of the given SelectionType of this SelectionManager. The given EntityList should not be empty.

After calling this method, getS election (type) contains all elements of the given array of Entities as well as any entities previously selected for that type.

Each Entity can be part of only one selection at a time. Therefore, all entities of the given array of Entities that were part of a selection of another SelectionType than the given type are removed from those selections.

All SelectionListeners registered at the time of the addToSelection are notified by a call of their method selectionChanged.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>• in entities : Entity [*]</li> <li>• in type : SelectionType</li> </ul> |

#### 7.1.1.7.3 clearAllSelections

Clears all selections of this SelectionManager.

After calling this method, the selection for any SelectionType contains no Entities.

All SelectionListeners registered at the time of the clearAllSelections are notified by a call of their method selectionChanged.

|            |        |
|------------|--------|
| Type       | void   |
| Visibility | public |
| IsAbstract | false  |
| Parameter  |        |

#### 7.1.1.7.4 clearSelection

Clears the selection of the given SelectionType of this SelectionManager.

After the selection of the given SelectionType of this SelectionManager does not contain any Entities. All other selections of this SelectionManager are unchanged.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>in type : SelectionType</li> </ul> |

#### 7.1.1.7.5 getSelection

Returns a list of selected Entities of the given SelectionType of this SelectionManager. Note that editing the returned EntitySet does not have an impact on the selection of the given SelectionType of this SelectionManager.

|            |   |
|------------|---|
| Type       | Entity  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>in type : SelectionType</li> </ul> |

#### 7.1.1.7.6 removeFromSelection

Removes all Entities in the given EntitySet from the selection to which they belong. Afterwards, these entities will not be contained in any selection until added (where contains is based on equals).

All SelectionListeners registered at the time of the removeFromS election are notified by a call of their method selectionChanged for each SelectionType from which at least one Entity was removed.

|            |  |
|------------|--|
| Type       | Entity   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in entities : Entity [*]</li> </ul> |

#### 7.1.1.7.7 removeSelectionListener

Unregisters the given SelectionListener from this SelectionManager. Afterwards the SelectionListener will not be notified of changes in the selections of this SelectionManager.

Unregistering a SelectionListener that was not registered therefore does not have any effect.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>in listener : SelectionListener</li> </ul> |

#### 7.1.1.7.8 setSelection

Changes the selection of the given SelectionType to the given EntitySet. The given EntitySet should not be empty (see clearSelection and clearAllS elections). Afterwards the set of Entities of getSelection( type ) equals the set of Entities of the given EntitySet.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in entities: Entity [*]</li> <li>in type : SelectionType</li> </ul> |

### 7.1.1.8 Interface TACSITController

This is the top level façade class for the Tactical Situation display (TACSIT) Controller API which enables clients to interact with SelectionManagers, Viewports, and Query TacSit content in terms of the Entity class.

The TacSit Controller API does not provide the mechanism for adding Entities to a TacSit. When a client receives an Entity from a Query, the client of the TacSit controller will interpret the Entity according to interfaces provided by other components than the Tacsit Controller (for instance an interaction with another component, which is known to have added the Entity to the TacSit by some other API.



Figure 7.17 - TacsitController

|                 |   |
|-----------------|---|
| Name            | TacsitController                                  |
| Qualified Name  | org :omg: :tacsit: :controller: :TacsitController |
| Visibility      | public  |
| Base Classifier |   |

#### 7.1.1.8.1 getProjections

Returns the projections that are supported by the TACSIT.

|            |            |
|------------|------------|
| Type       | Projection |
| Visibility | public     |
| IsAbstract | false      |
| Parameter  |            |

#### 7.1.1.8.2 getEntityTypes

Returns the Entity Types that are supported by the TAC SIT. This will return a list of all Entity Types currently available for Selection and Query by this TACSITController.

|            |            |
|------------|------------|
| Type       | EntityType |
| Visibility | public     |
| IsAbstract | false      |
| Parameter  |            |

#### 7.1.1.8.3 getQueryManager

Returns the QueryManager for this Tacsit Controller.

|            |              |
|------------|--------------|
| Type       | QueryManager |
| Visibility | public       |
| IsAbstract | false        |
| Parameter  |              |

#### 7.1.1.8.4 getSelectionManager

Returns the SelectionManager that handles the selection on the viewport with name viewportName.

Depending on the SelectionMethodology of the Tacsit Controller the returned SelectionManagers for multiple viewports (different named viewports) will be identical or different. If the SelectionMethodology is ViewportDependent then a different SelectionManager is returned for each individual viewport. If SelectionMethodology is ViewportIndependent, then one SelectionManager is used for all viewports, thus making selection “global” within the scope of this TACSITController.

|            |                            |
|------------|----------------------------|
| Type       | SelectionManager           |
| Visibility | public                     |
| IsAbstract | false                      |
| Parameter  | • in viewportName : String |

#### 7.1.1.8.5 getSelectionMethodology

Returns the SelectionMethodology of the Tacsit controller. If the SelectionMethodology is ViewportDependent then each viewport is managed by its own SelectionManager. If SelectionMethodology is ViewportIndependent, then one SelectionManager is used for all viewports, thus making selection “global” within the scope of this TACSITController.

|            |                      |
|------------|----------------------|
| Type       | SelectionMethodology |
| Visibility | public               |
| IsAbstract | false                |
| Parameter  |                      |

### 7.1.1.8.6 getViewportManager

Returns the ViewportManager for this Tacsit Controller.

|            |                 |
|------------|-----------------|
| Type       | ViewportManager |
| Visibility | public          |
| IsAbstract | false           |
| Parameter  |                 |

### 7.1.1.9 Class ViewEyeProperties

ViewEyeProperties groups the attributes of a Viewport that have an impact on the position where Entities are displayed in the Viewport.

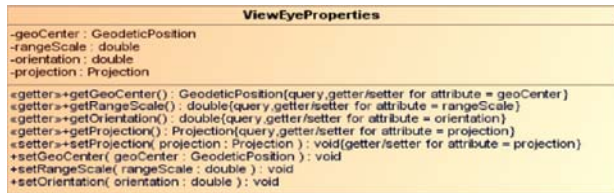


Figure 7.18 - ViewEyeProperties

|                    |   |
|--------------------|---|
| Name               | ViewEyeProperties                                   |
| Qualified Name     | org: :omg: :tacsit: :controller: :ViewEyeProperties |
| Visibility         | public  |
| Abstract           | false   |
| Base Classifier    |   |
| Realized Interface |   |

### 7.1.1.9.1 geoCenter

The geographic center of the Viewport. The geoCenter of the Viewport is the [Geoposition](#) [GeodeticPosition](#) that is displayed in the center of the Viewport (i.e., on a Viewport of w pixels wide and h pixels high, it is displayed on pixel (w/2, h/2) ).

Comment [MW4]: This change made in accordance with FTF Issue 15792

|               |  |
|---------------|--|
| Type          | <a href="#">GeoPosition</a> <a href="#">GeodeticPosition</a> |
| Default Value |  |
| Visibility    | public   |
| Multiplicity  | 1  |

Comment [MW5]: This change made in accordance with FTF Issue 15792



#### 7.1.1.9.2 orientation

The orientation of the Viewport.

The orientation is applied on the Viewport as an Angle rotation of the Viewport in clockwise direction around the Viewport's center. See the definition of Angle for precision guidance.

|               |        |
|---------------|--------|
| Type          | Angle  |
| Default Value |        |
| Visibility    | public |
| Multiplicity  | 1      |

#### 7.1.1.9.3 projection

The projection of the Viewport. The projection object here is assumed to be one of the Projections provided by the TACSIT Controller method "getProjections()." This specification does not address any further details of how to handle projections.

|              |            |
|--------------|------------|
| Type         | Projection |
|              |            |
| Visibility   | public     |
| Multiplicity |            |

#### 7.1.1.9.4 rangeScale

The rangescale of the Viewport. The rangescale is the Distance from the center of the viewport to the nearest viewport edge.

|               |          |
|---------------|----------|
| Type          | Distance |
| Default Value |          |
| Visibility    | public   |
| Multiplicity  | 1        |

#### 7.1.1.9.5 getters/setters

Each of the the attributes of the ViewEyeProperties class has an associated getter and setter method matching in name and type with the attribute. See the class image above for the signature for these methods.

#### 7.1 .1.10 Interface Viewport

The Viewport class enables a TacSit client to interact with the basic properties of a TacSit view. In particular the view's name, where it is centered, how it is scaled, projected and oriented, and the selections it has (through its SelectionManager instance).

```

Viewport
+getName(): String
+setViewEye( viewEyeProps : ViewEyeProperties ): void
+getViewEye(): ViewEyeProperties
+addViewportChangeListener( listener : ViewportChangeListener ): void
+removeViewportChangeListener( listener : ViewportChangeListener ): void
+setName( name : String ): void
+convertScreenPosition( screenPos : ScreenPosition ): GeodeticPosition
+convertGeoPosition( geoPos : GeodeticPosition ): ScreenPosition
+scaleToPoints( points : GeodeticPosition [1..*], margin : double ): void

```

Figure 7.19 - Viewport

|                 |   |
|-----------------|---|
| Name            | Viewport                                  |
| Qualified Name  | org :omg: :tacsit: :controller: :Viewport |
| Visibility      | public                                    |
| Base Classifier |   |

**7.1.1.10.1 addViewportChangeListener**

Registers the given ViewportChangeListener to this Viewport. After registration the ViewportChangeListener will be notified through its only method each time that a viewport is changed. Registering a ViewportChangeListener that was already registered with this Viewport does not have any effect.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in listener : ViewportChangeListener</li> </ul> |

**7.1.1.10.2 convertGeoPosition**

Converts the given GeodeticPosition into a ScreenPosition (pixels). Note that the conversion will not be valid if the give position is not projectable to the screen in that case an error condition is returned (specified by the PSM).

|            |  |
|------------|--|
| Type       | ScreenPosition   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in geoPos : GeodeticPosition</li> </ul> |

**7.1.1.10.3 convertScreenPosition**

Converts the passed screen position (pixels) into a geo position. Note that the conversion will not be valid if the give screen position is not projectable to the earth model in that case an error condition is returned (specified by the PSM).

|            |   |
|------------|---|
| Type       | GeodeticPosition  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>in screenPos : ScreenPosition</li> </ul> |

**7.1.1.10.4 getName**

Returns the name of the Viewport.

|            |        |
|------------|--------|
| Type       | String |
| Visibility | public |
| IsAbstract | false  |
| Parameter  |        |

**7.1.1.10.5 getViewEye**

Returns a copy of the current ViewEyeProperties of the Viewport. Modification to the returned ViewEyeProperties object will have no effect on the Viewport. To effect change, call the setViewEye method with the desired properties.

|            |                   |
|------------|-------------------|
| Type       | ViewEyeProperties |
| Visibility | public            |
| IsAbstract | false             |
| Parameter  |                   |

**7.1.1.10.6 removeViewportChangeListener**

Unregisters the given ViewportChangeListener from this Viewport. Afterwards the ViewportChangeListener will not be notified of Viewport changes. Unregistering a ViewportChangeListener that was not registered does not have any effect.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in listener : ViewportChangeListener</li> </ul> |

**7.1.1.10.7 scaleToPoints**

Offset and scale the viewport to contain all points (as possible) passed in the given [GeoPositionGeodeticPositions](#) array. The margin Distance parameter specifies an additional space that needs to be visible around the broadest points in the points list.

Comment [MW6]: This change made in accordance with FTF Issue 15792

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in margin : double (in meters) - if the margin value is negative, it is handled as 0.</li> <li>in points : <a href="#">GeoPositionGeodeticPosition</a> [1 ..n]</li> </ul> |

Comment [MW7]: This change made in accordance with FTF Issue 15792

#### 7.1.1.10.8 setName

Set the name of the Viewport to the given name.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in name : String</li> </ul> |

#### 7.1.1.10.9 setViewEye

Set the ViewEye properties of the Viewport to the given ViewEyeProperties. If any of the attributes of the given ViewEyeProperties object are not set, the current value of the Viewport for that attribute will not be affected.

Later changes to the given ViewEyeProperties object do not have an effect on the Viewport.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>in viewEyeProps : ViewEyeProperties</li> </ul> |

#### 7.1.1.11 ClassViewportChangeEvent

ViewportChangeEvent is the type of event that is passed to a ViewportChangeListener each time the Viewport changes. Through the ViewportChangeEvent it is possible to know which Viewport has been changed and details of the change.

If there are properties other than the view eye that the client is interested in, they can query the associated Viewport Object contained in the event available in the getSource() method.



Figure 7.20 - ViewportChangeEvent

|                |  |
|----------------|--|
| Name           | ViewportChangeEvent                                  |
| Qualified Name | org :omg: :tacsit: :controller: :ViewportChangeEvent |
| Visibility     | public   |
| Abstract       | true   |

#### 7.1.1.11.1 getSource

Returns the Viewport that has changed associated with this event.

|            |        |
|------------|--------|
| Type       | void   |
| Visibility | public |
| IsAbstract | false  |
| Parameter  |        |

#### 7.1.1.11.2 getViewEyeProperties

Returns a copy of the ViewEyeProperties of the Viewport that has changed.

|            |                   |
|------------|-------------------|
| Type       | ViewEyeProperties |
| Visibility | public            |
| IsAbstract | false             |
| Parameter  |                   |

#### 7.1.1.12 Interface ViewportChangeListener

ViewportChangeListener is the type of object that is notified about a Viewport that it is registered for notification of changes.

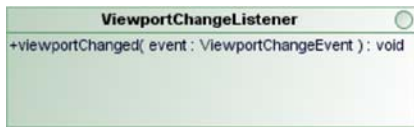


Figure 7.21 - ViewportChangeListener

|                 |   |
|-----------------|---|
| Name            | ViewportChangeListener                                  |
| Qualified Name  | org :omg: :tacsit: :controller: :ViewportChangeListener |
| Visibility      | public  |
| Base Classifier |   |

#### 7.1.1.12.1 viewportChanged

This method is called by the Viewport where this ViewportChangeListener is registered in case a Viewport is changed. The details of the change can be obtained through the given ViewportChangeEvent.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in event : ViewportChangeEvent</li> </ul> |

#### 7.1.1.13 Interface ViewportManager

The ViewportManager enables a TacSit client to manage Viewport instances and track changes to the set of Viewports. Construction of a Viewport is outside of the scope of this interface. Once Viewport objects are created they can be added to a manager via the addViewport method.



Figure 7.22 - ViewportManager

|                 |  |
|-----------------|--|
| Name            | ViewportManager                                    |
| Qualified Name  | org : :omg: :tacsit: :controller: :ViewportManager |
| Visibility      | public   |
| Base Classifier |  |

#### 7.1.1.13.1 addViewport

Add a Viewport to this ViewportManager. If the Viewport is already added to the ViewportManager before, this operation has no effect.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in viewport : Viewport</li> </ul> |

#### 7.1.1.13.2 addViewportManagerListener

Registers the given ViewportManagerListener to this ViewportManager. After registration the ViewportManagerListener will be notified through each time that a viewport is added or removed through its corresponding method. Registering a ViewportManagerListener that was already registered with this ViewportManager does not have any effect.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"><li>in listener : ViewportManagerListener</li></ul> |

#### 7.1.1.13.3 getViewport

Returns the Viewport with the given name. If there is no such Viewport, an error condition is given. (specified by the PSM)

|            |  |
|------------|--|
| Type       | Viewport   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"><li>in name : String</li></ul> |

#### 7.1.1.13.4 getViewports

Returns all Viewports managed by this ViewportManager.

|            |            |
|------------|------------|
| Type       | Viewport[] |
| Visibility | public     |
| IsAbstract | false      |
| Parameter  |            |

#### 7.1.1.13.5 removeViewport

Remove the given Viewport from this ViewportManager. If the given Viewport is not managed by this ViewportManager, this operation as no effect.

|            |  |
|------------|--|
| Type       | void   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"><li>in viewport : Viewport</li></ul> |

#### 7.1.1.13.6 removeViewportManagerListener

Unregisters the given ViewportManagerListener from this ViewportManager. Afterwards the ViewportManagerListener will not be notified of added or removed Viewports.

Unregistering a ViewportManagerListener that was not registered does not have any effect.

|            |   |
|------------|---|
| Type       | void                                    |
| Visibility | public                                  |
| IsAbstract | false                                   |
| Parameter  | • in listener : ViewportManagerListener |

#### 7.1.1.14 Interface ViewportManagerEvent

ViewportManagerEvent is the type of event that is passed to a ViewportManagerListener each time a Viewport is added or removed from the ViewportManager. Through the ViewportManagerEvent it is possible to know which Viewport has been added to which ViewportManager.



Figure 7.23 - ViewportManagerEvent

|                 |  |
|-----------------|--|
| Name            | ViewportManagerEvent                                   |
| Qualified Name  | org: :omg: :tacsit: :controller: :ViewportManagerEvent |
| Visibility      | public   |
| Base Classifier |  |

##### 7.1.1.14.1 getSource

Returns the ViewportManager to which a Viewport has been added or removed.

|            |                 |
|------------|-----------------|
| Type       | ViewportManager |
| Visibility | public          |
| IsAbstract | false           |
| Parameter  |                 |

##### 7.1.1.14.2 getViewport

Returns the viewport that has been added or removed by this event.

|            |          |
|------------|----------|
| Type       | Viewport |
| Visibility | public   |
| IsAbstract | false    |
| Parameter  |          |



### 7.1.1.15 Interface ViewportManagerListener

ViewportManagerListener is the type of object that is notified by a ViewportManager where it is registered in case a Viewport is added or removed from that ViewportManager.



Figure 7.24 - ViewportManagerListener

|                 |   |
|-----------------|---|
| Name            | ViewportManagerListener                                   |
| Qualified Name  | org: :omg: :tacsit: :controller: :ViewportManagerListener |
| Visibility      | public  |
| Base Classifier |   |

#### 7.1.1.15.1 viewportAdded

This method is called by the ViewportManager where this ViewportManagerListener is registered in case a Viewport is added.

The details of the addition can be obtained through the given ViewportManagerEvent.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"><li>in event : ViewportManagerEvent</li></ul> |

#### 7.1.1.15.2 viewportRemoved

This method is called by the ViewportManager where this ViewportManagerListener is registered in case a Viewport is removed.

The details of the removal can be obtained through the given ViewportManagerEvent.

|            |   |
|------------|---|
| Type       | void  |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"><li>in event : ViewportManagerEvent</li></ul> |

### 7.1.1.16 EnumerationSelectionMethodology

SelectionMethodology determines the scope of the SelectionManagers of the TACSIT Controller API.

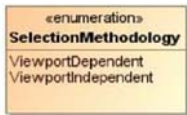


Figure 7.25 - SelectionMethodology

|                 |   |
|-----------------|---|
| Name            | SelectionMethodology                                    |
| Qualified Name  | org: :omg: :tacsit: :controller: : SelectionMethodology |
| Visibility      | public  |
| Base Classifier |   |

If the SelectionMethodology is ViewportDependent each Viewport of the TacsitController has its own SelectionManager. Therefore the selection on one viewport does not depend on the selection on another viewport.

If SelectionMethodology is ViewportIndependent all Viewports of the TacsitController have a common SelectionManager. Therefore the selection on one viewport depends on the selection on another viewport: the selections on multiple viewports are identical.

### 7.1.1.17 EnumerationSelectionType

SelectionType allows distinguishing different kinds of selection in the Tacsit. [The selection type of OTHER is included for user implementation extensibility. Use of this type is provided for potential growth without impacting the basic functionality of the standard.](#)

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Comment [MW8]: Changed in accordance with issue: 15798

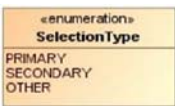


Figure 7.26 - SelectionType

|                 |  |
|-----------------|--|
| Name            | SelectionType                                    |
| Qualified Name  | org: :omg: :tacsit: :controller: : SelectionType |
| Visibility      | public   |
| Base Classifier |  |

The names of the instances are self explanatory.

## 7.2 Package org.omg.tacsit.query

The org.omg.tacsit.query package contains the interfaces for building queries about Entities that are used by the controller.

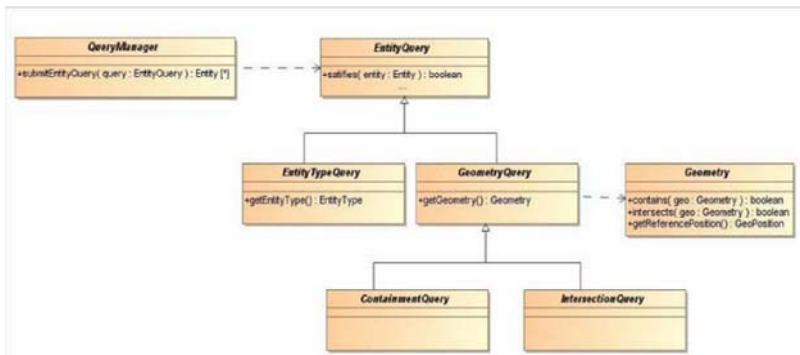


Figure 7.27 - Query Interfaces

The query interfaces are designed to provide maximum flexibility to the implementing system while still providing a useful API. The pattern for executing a query is to “build” a query using the appropriate EntityQuery objects (or its subclasses) and to submit that query to the QueryManager. The query manager will return the Entity objects that meet the query “satisfies” method.

The basic EntityQuery is intended to provide an equals comparison on the entity object to “satisfy” the query. More specialized queries can be created by overriding the “satisfies” method. With these queries the client application can compare to any attribute in its system-specific Entity Object and query it from the TACSIT Controller.

### 7.2.1 Class / Interface Specifications

The following provides a detailed description of the interface classes in the query package.

#### 7.2.1.1 Interface ContainmentQuery

The ContainmentQuery is used to determine whether or not an Entity is completely contained within a Geometry. Containment is determined by using the Entity’s Geometry as an argument to the contains() method on the Geometry specified by this Query, i.e., this.satisfies( entity ) = this.getGeometry().contains( entity.getGeometry() )



Figure 7.28 - ContainmentQuery

|                 |   |
|-----------------|---|
| Name            | ContainmentQuery  |
| Qualified Name  | org: :omg: :tacsit: :controller: :ContainmentQuery              |
| Visibility      | public  |
| Base Classifier | <ul style="list-style-type: none"> <li>GeometryQuery</li> </ul> |

**7.2.1.2 Interface EntityQuery**

An EntityQuery encapsulates the criteria against which an Entity may be evaluated for membership.



**Figure 7.29 - EntityQuery**

|                 |  |
|-----------------|--|
| Name            | EntityQuery                              |
| Qualified Name  | org: :omg: :tacsit: :query: :EntityQuery |
| Visibility      | public                                   |
| Base Classifier |  |

**7.2.1.2.1 satisfies**

Returns true if the specified Entity satisfies the criteria represented by this EntityQuery; false otherwise.

|            |   |
|------------|---|
| Type       | boolean   |
| Visibility | public  |
| IsAbstract | false   |
| Parameter  | <ul style="list-style-type: none"> <li>in event : Entity</li> </ul> |

**7.2.1.3 Interface EntityTypeQuery**

The EntityTypeQuery is used to determine whether or not a given Entity belongs to a particular EntityType.



**Figure 7.30 - EntityTypeQuery**

|                 |   |
|-----------------|---|
| Name            | EntityTypeQuery   |
| Qualified Name  | org: :omg: :tacsit: :query: :EntityTypeQuery                                    |
| Visibility      | public  |
| Base Classifier | <ul style="list-style-type: none"> <li>• <a href="#">EntityQuery</a></li> </ul> |

#### 7.2.1.3.1 getEntityTypes

Returns the EntityType to compare with.

|            |            |
|------------|------------|
| Type       | EntityType |
| Visibility | public     |
| IsAbstract | false      |
| Parameter  |            |

#### 7.2.1.4 Interface GeometryQuery

The GeometryQuery is used to determine whether or not a given Entity has a geometrical relationship with a particular Entity.



Figure 7.31 - GeometryQuery

|                 |   |
|-----------------|---|
| Name            | GeometryQuery   |
| Qualified Name  | org: :omg: :tacsit: :query: :GeometryQuery                                      |
| Visibility      | public  |
| Base Classifier | <ul style="list-style-type: none"> <li>• <a href="#">EntityQuery</a></li> </ul> |

#### 7.2.1.4.1 getGeometry

Returns the Geometry against which an Entity will be evaluated..

|            |          |
|------------|----------|
| Type       | Geometry |
| Visibility | public   |
| IsAbstract | false    |
| Parameter  |          |

### 7.2.1.5 Interface IntersectionQuery

The IntersectionQuery is used to determine if an Entity intersects geometrically with a Geometry. Intersection is determined by using the Entity's Geometry as an argument to the intersects() method on the Geometry specified by this Query, i.e., `this.satisfies( entity ) = this.getGeometry().intersects( entity.getGeometry() )`



Figure 7.32 - IntersectionQuery

|                 |  |
|-----------------|--|
| Name            | IntersectionQuery                              |
| Qualified Name  | org: :omg: :tacsit: :query: :IntersectionQuery |
| Visibility      | public   |
| Base Classifier | • <a href="#">GeometryQuery</a>                |

### 7.2.1.6 InterfaceQueryManager

The QueryManager supports the execution of queries for entities against the TACSIT Controller.

Queries submitted through the QueryManager are transient in nature; that is, the results of a query represent the state of the TacSit Controller at the time the Query was executed. Query results will not be maintained by the QueryManager as the state of the TacSit Controller changes. Since the QueryManager treats the Query objects as stateless, the same Query may be re-used for any number of subsequent submissions.



Figure 7.33 - QueryManager

|                 |   |
|-----------------|---|
| Name            | QueryManager                              |
| Qualified Name  | org: :omg: :tacsit: :query: :QueryManager |
| Visibility      | public                                    |
| Base Classifier |   |

### 7.2.1.6.1 submitEntityQuery

Returns the set of all Entities that satisfy the criteria expressed in the given EntityQuery..

|            |  |
|------------|--|
| Type       | Entity   |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>in query : EntityQuery</li> </ul> |

## 7.3 Package org.omg.tacsit.geometry

The org.omg.tacsit.geometry package contains the interfaces for describing the location and bounds of regions of interest to the TACSIT Controller API.

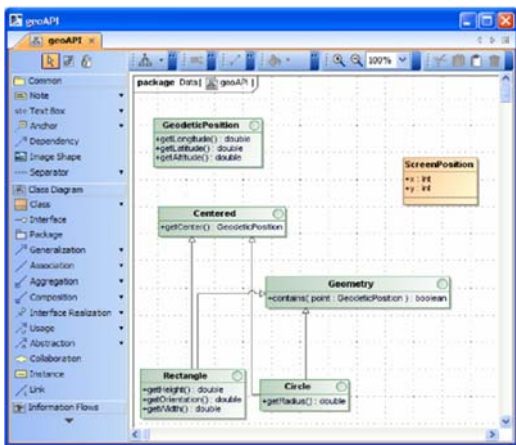


Figure 7.34 - Query Interfaces

The interfaces described here are the minimal subset of possible geometries for interacting with the TACSIT.

### 7.3.1 Class / Interface Specifications

The following provides a detailed description of the interface classes in the query package.

#### 7.3.1.1 Interface Geometry

Geometry is the base class for all representations of geometric shapes. Every Geometry must be able to evaluate containment and intersection criteria between itself and any other Geometry. For non-closed Geometries, or for Geometries with edges that cross, it is up to those Geometries to define containment of a specified point within that Geometry.

This OMG specification is consistent with the OGC “OpenGIS® Implementation Specification for Geographic information - Simple feature access - Part 1: Common architecture” (Doc: OGC 06-103r3; Version: 1.2.0; Date: 2006-10-05) in that this OMG specification does not contradict the OGC specification and uses the same names for types and methods where possible.

This OMG Specification does not require a Geometry to completely implement the OGC specification.

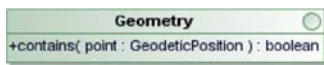


Figure 7.35 - Geometry

|                 |   |
|-----------------|---|
| Name            | Geometry  |
| Qualified Name  | org: :omg: :tacsit: :geometry: :Geometry  |
| Visibility      | public  |
| Base Classifier | <ul style="list-style-type: none"> <li>• Cloneable</li> <li>• Serializable</li> </ul> |

#### 7.3.1.1.1 contains

Returns TRUE if the passed GeodeticPosition object “point” projected on the surface of the Earth is contained within this Geometry object. .

|            |  |
|------------|--|
| Type       | boolean  |
| Visibility | public   |
| IsAbstract | false  |
| Parameter  | <ul style="list-style-type: none"> <li>• in geo : GeodeticPoint</li> </ul> |

#### 7.3.1.2 Interface GeodeticPosition

~~GeoPosition~~GeodeticPosition represent a geographical location i.e., a position on the earth.

Comment [MW9]: This change made in accordance with FTF Issue 15792

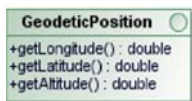


Figure 7.36 - GeodeticPosition



|                 |  |
|-----------------|--|
| Name            | GeodeticPosition                                 |
| Qualified Name  | org: :omg: :tacsit: :geometry: :GeodeticPosition |
| Visibility      | public   |
| Base Classifier | • <a href="#">Geometry</a>                       |

#### 7.3.1.2.1 getLatitude

Returns the latitude in Radians.

|            |        |
|------------|--------|
| Type       | double |
| Visibility | public |
| IsAbstract | true   |
| Parameter  |        |

#### 7.3.1.2.2 getLongitude

Returns the longitude in Radians.

|            |        |
|------------|--------|
| Type       | double |
| Visibility | public |
| IsAbstract | true   |
| Parameter  | none   |

#### 7.3.1.2.3 getAltitude

Returns the altitude in meters or {Double.NAN} if the altitude is not valid.

|            |        |
|------------|--------|
| Type       | double |
| Visibility | public |
| IsAbstract | true   |
| Parameter  | none   |

#### 7.3.1.3 Class ScreenPosition

ScreenPosition is a simple class to encapsulate a point location on the screen.



**Figure 7.37 - ScreenPosition**

|                |   |
|----------------|---|
| Name           | ScreenPosition                                      |
| Qualified Name | org.omg.tacsit.geometry.coordinate : ScreenPosition |
| Visibility     | public  |
| Abstract       | false   |

**7.3.1.3.1 x**

The x position of the point.

|               |        |
|---------------|--------|
| Type          | int    |
| Default Value |        |
| Visibility    | public |
| Multiplicity  | 1      |

**7.3.1.3.2 y**

The y position of the point.

|               |        |
|---------------|--------|
| Type          | int    |
| Default Value |        |
| Visibility    | public |
| Multiplicity  | 1      |

**7.3.1.4 Interface Centered**

Centered is a simple class to designate that a particular Geometry object is centred at a certain GeodeticPosition.



**Figure 7.38 - Centered**

|                 |  |
|-----------------|--|
| Name            | Centered                                 |
| Qualified Name  | org: :omg: :tacsit: :geometry: :Centered |
| Visibility      | public                                   |
| Base Classifier |  |

#### 7.3.1.4.1 getCenter()

Returns the center of the geometry..

|            |                  |
|------------|------------------|
| Type       | GeodeticPosition |
| Visibility | public           |
| IsAbstract | true             |
| Parameter  | none             |

#### 7.3.1.5 Interface Circle

Circle is a simple centred circular geometry with a radius measured in meters.

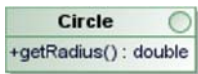


Figure 7.39 - Circle

|                 |  |
|-----------------|--|
| Name            | Circle   |
| Qualified Name  | org: :omg: :geometry: :Circle  |
| Visibility      | public   |
| Base Classifier | <ul style="list-style-type: none"> <li>• <a href="#">Centered</a></li> <li>• <a href="#">Geometry</a></li> </ul> |

#### 7.3.1.5.1 getRadius()

Returns the radius of the circle in meters.

|            |        |
|------------|--------|
| Type       | double |
| Visibility | public |
| IsAbstract | false  |
| Parameter  |        |

### 7.3.1.6 Rectangle

Rectangle is a simple centred geometry with a width and height measured in meters. An orientation is provided to skew the rectangle as necessary.

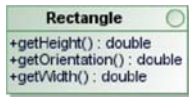


Figure 7.40 - Rectangle

|                 |   |
|-----------------|---|
| Name            | Rectangle   |
| Qualified Name  | org: :omg: :tacsit: :geometry: :REctangle                                 |
| Visibility      | public  |
| Base Classifier | <ul style="list-style-type: none"><li>Centered</li><li>Geometry</li></ul> |

#### 7.3.1.6.1 getHeight

Returns the height of the rectangular shape in meters.

|            |        |
|------------|--------|
| Type       | double |
| Visibility | public |
| IsAbstract | false  |
| Parameter  |        |

#### 7.3.1.6.2 getOrientation

Returns the azimuth of the y axis of the rectangle shape, where zero is north in radians.

|            |        |
|------------|--------|
| Type       | double |
| Visibility | public |
| IsAbstract | false  |
| Parameter  |        |

#### 7.3.1.6.3 getWidth

Returns the width of the rectangle shape in meters.

|            |        |
|------------|--------|
| Type       | Double |
| Visibility | Public |
| IsAbstract | False  |
| Parameter  |        |

## 8 Java Platform Specific Model

A Java PSM is provided separately. The PSM contains a Java-specialized UML Model, and sample Java classfiles of the requisite classes.

Note that in the Java PSM, the ScreenPosition class is replaced by the standard Java representation of a screen position (java.awt.Point). This is noted in the Java UML Model.

Additionally, instead of using array types for parameters and return types with multiple values, a templated version of the standard Java Collection Object (List) java.util.List<NecessaryType> has been used.



## 9 C++ Platform Specific Model

A C++ PSM is provided separately. The PSM contains a [sample normative](#) C++ header files of the requisite classes.

Comment [MW10]: FTF Issue 15803



