MISE

Maritime Information Sharing Environment

NIEM-Maritime Exchange Model Summary

Position

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About This Document

Information sharing is about implementing a service to move and manage the information required to execute a mission. The implementation of an information exchange service requires a valid information model *and* a defined process for requesting and providing information.

The Exchange Model Summary document is designed to provide information about both the exchange model *and* the exchange process. Contained are the artifacts used to develop and document the exchange model, an example sequence of user and system actions that are the sharing process, and a sample message.

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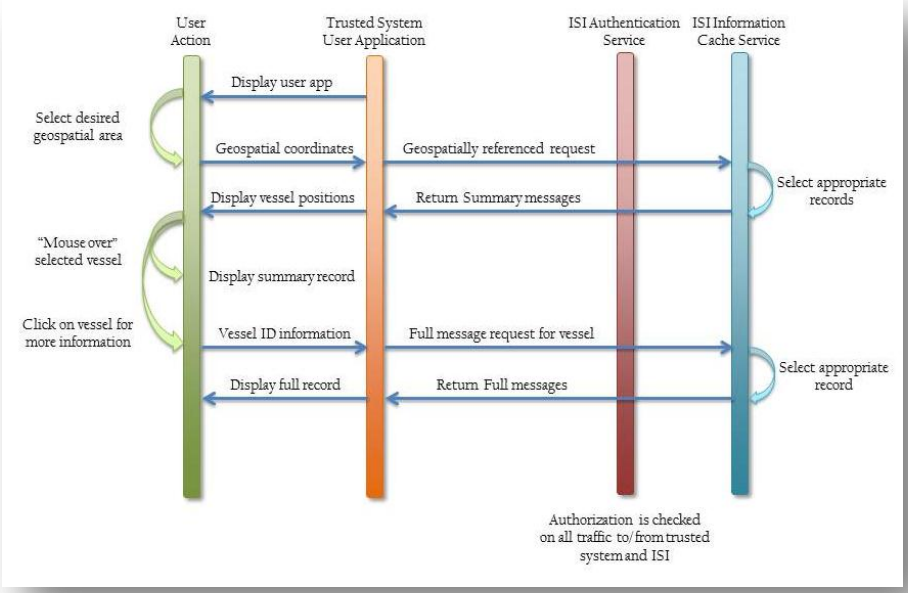
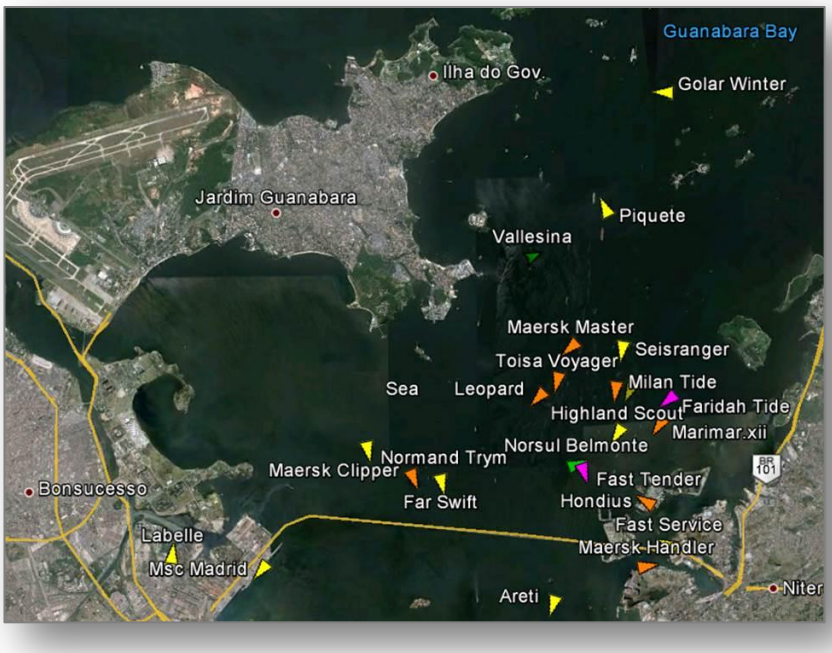
Information Exchange Sequence

An information sharing process can be as simple as a direct, single service that required no interaction and doesn't change. However, frequently the exchange process includes user interaction. An understanding of that interaction and the associated data for each step is required before the exchange service can be established. This sequence diagram is an example of an process that could be used with any exchange model.

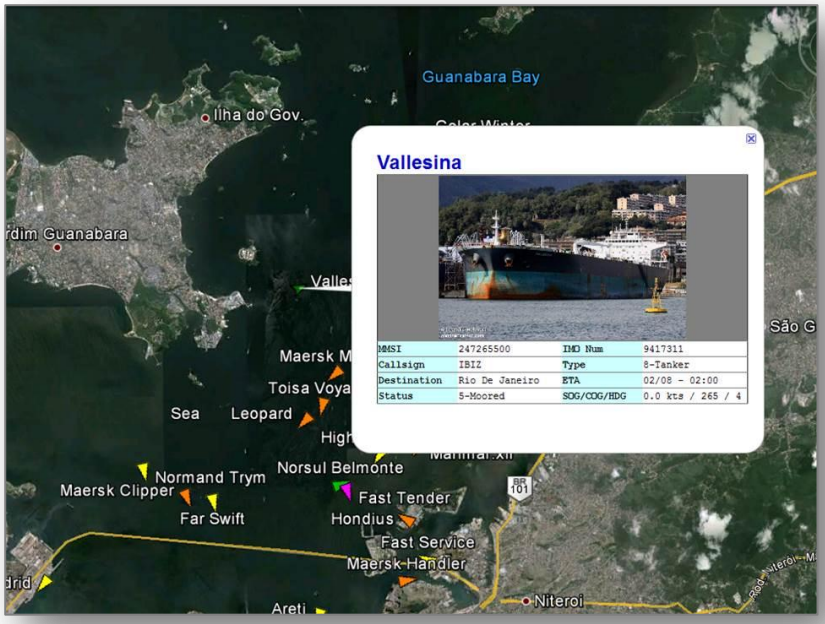


In this example, a user draws a box area a desired area on a geospatial display. The geospatial coordinates are sent from the trusted system, via a previously defined request message format, to the information service. The information service returns a summary message for each of the vessels in the geospatial box.

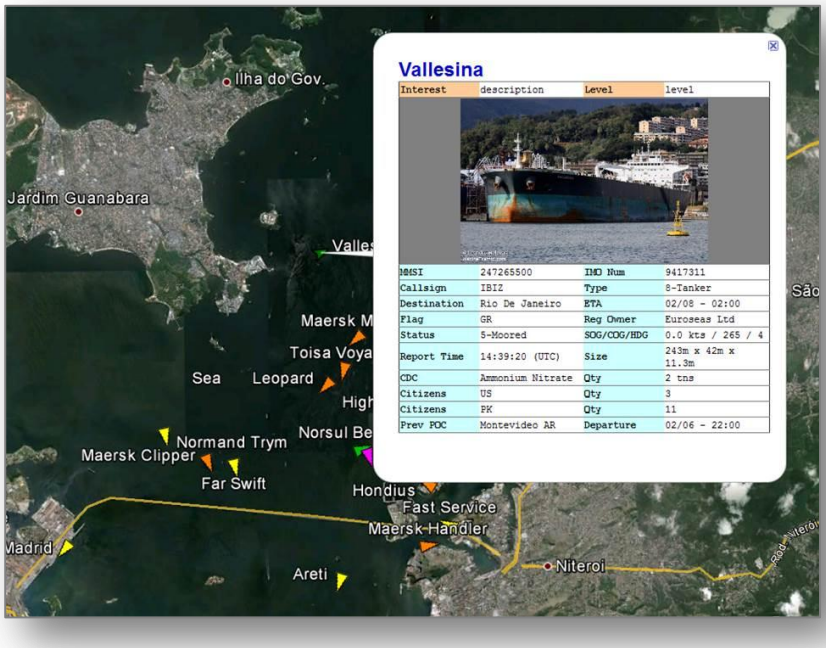
The returned information is displayed on the user display.



If the user clicks on a specific vessel, a “baseball card” of the summary information is displayed.



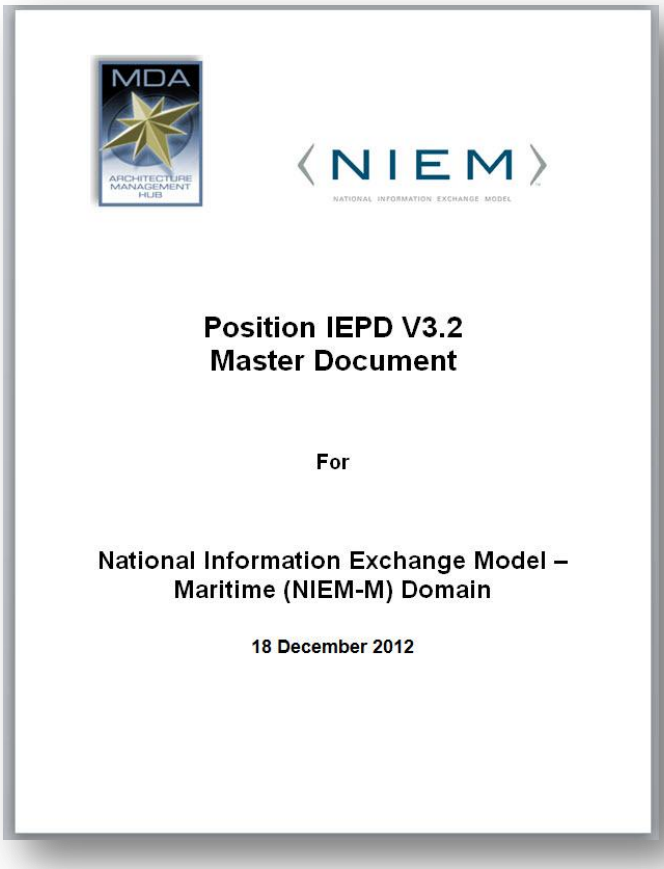
If the user clicks on the vessel again, the specific vessel identification information is sent from the trusted system, via a previously defined request message format, to the information service. The information service returns a full message for the vessel identified. The returned information is displayed on the user display.



This sequence depicts a possible process, many others could be defined. The important point is that a process *is* defined for the service.

INFORMATION EXCHANGE PACKAGE DOCUMENTATION (IEPD)

IEPDs are the cornerstone for maritime information exchanges. Each IEPD within NIEM-M defines a particular XML message, which is the basic unit of shared information. As requirements emerge, IEPDs can be created and altered for specific community's needs using Maritime Enterprise Information Exchange Models (EIEM). EIEMs define the core elements that are reused in multiple maritime exchanges. EIEMs can be viewed as the building blocks of a Maritime IEPD. The Position IEPD defines a Vessel Position message using the definition of *Vessel* and *Position* from the Maritime EIEMs.



The graphic shows the Position IEPD Master Document. An IEPD includes information about; NIEM-M; EIEMs and namespaces used for the IEPD; and structure of the IEPD. IEPD materials are accessible and downloadable via www.mise.mda.gov.

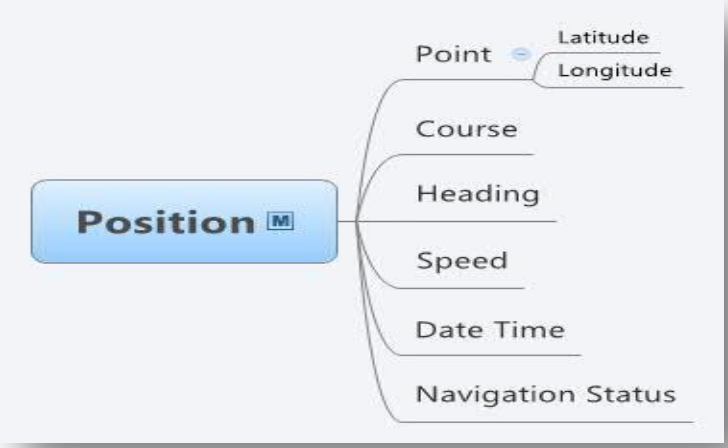
Logical Diagrams

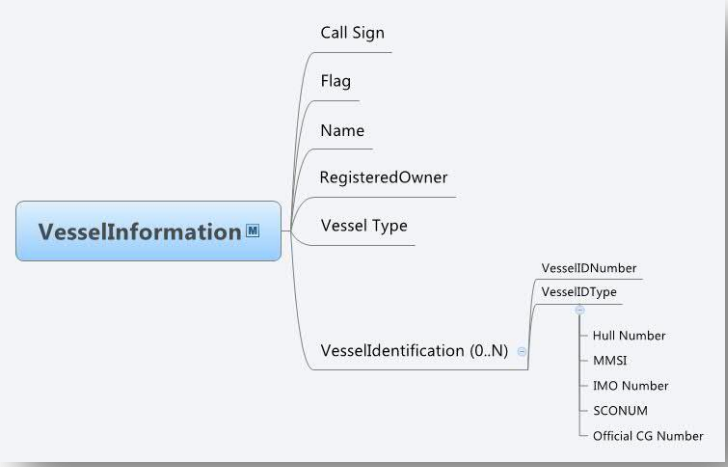
Below are graphical representations of the exchange and request/query models for positions. For the exchange model, the right side shows the associated data elements for a given position. For the request /query model, the right side shows the two methods you can request for position data, either *by geo-location* or *vessel*. All of this data is filtered through the metadata on the left.

Exchange Model – Block Level

Request/Query Model

Logical Blocks





Element Mapping

Below is a table that contains the metadata and data elements from the NIEM exchange model. The tables are broken into sections representing the unique data within the IEPD and the supporting EIEMs.

Metadata

Common Name	Description	Occ.	Type
Creation Date	A date a document was created	0..1	date
Creator	Entity primarily responsible for creating the content of the resource	0..1	
› *Contact Email*	An electronic mailing address by which the document creator may be contacted	0..1	string
› *Contact Name*	The name of a person who is the contact for the document creator	0..1	string
› *Contact Phone*	A telephone number by which the document creator may be contacted	0..1	string
› *Organization Name*	The name of an organization who is the document creator	0..1	string
Exercise Name	Exercise name	0..1	string
Expansion	Additional information	0..1	
› *Data Field*	A single data field	0..*	
›› Data Field Name	The name of a data field	1..1	string
›› Data Field Content	The value of a data field	0..1	string
Expiration Date	A date a transmitted document expires	0..1	date
ISM Marking		0..1	
› *Classification*	A single indicator of the highest level of classification applicable to an information resource or portion within the domain of classified national security information	0..1	string
› *Dissemination Controls*	One or more indicators identifying the expansion or limitation on the distribution of information	0..1	string
› *Owner Producer*	One or more indicators identifying the national	0..1	string

	government or international organization that have purview over the classification marking of an information resource or portion therein		
Record ID	A unique ID identifying a record	0..1	uri
Source System	The name of a source system from which the message originated	0..1	string
Status	A status of a message. An initial, update to an existing, or canceling an existing message	0..1	code
Security Indicator	Security indicator (LEI, PPI, COI, etc.)	0..1	string
Scope	Scope of the data	0..1	string
Scope Indicator	Security indicator for the scope of the data	0..1	string
Releasable	Whether the data is releasable	0..1	boolean
Releasable Nations	Nations allowed for release	0..1	list of code

POSITION

Common Name	Description	Occ.	Type
Position	A position	0..1	
› *Point*	A location specified by a 2D or 3D geometric point	0..1	list of double
› *Course*	A measure of the angular course	0..1	string
› *Speed*	A measure of the speed	0..1	string
› *Heading*	A measure of the angular heading	0..1	string
› *Date Time*	The date and time that a position was recorded or measured.	0..1	datetime
› *Navigation Status*	A navigational status	0..1	string

VESSEL INFORMATION

Common Name	Description	Occ.	Type
Call Sign	The call sign for a vessel	0..1	string
Flag	The national flag under which a vessel sails	0..1	code
Hull Number	The hull number of a vessel	0..1	string

IMO Number	The International Maritime Organization Number (IMO number) of a vessel	0..1	string
MMSI	The Maritime Mobile Service Identity (MMSI) of a vessel	0..1	string
Name	The name of a vessel	0..1	string
Owner	The entity that owns a vessel	0..1	
› *Person Name*	The name of the person that owns a vessel	0..1	string
› *Organization Name*	The name of the organization that owns a vessel	0..1	string
SCONUM	The Ship Control Number (SCONUM) of a vessel	0..1	string
Vessel Type	The type of vessel	0..1	string
Official CG Number	An official United States Coast Guard Number (USCG Official Number) of a vessel	0..1	string

SAMPLE MESSAGE

Below is a sample of the xml exchange message.

```
<?xml version="1.0" encoding="UTF_8" ?>
<posex:Message
    xsi:schemaLocation="http://niem.gov/niem/domains/maritime/2.1/position/exchange/3.2 ../XMLSchemas/exchange/3.2/position_exchange.xsd"
    xmlns:m="http://niem.gov/niem/domains/maritime/2.1"
    xmlns:mda="http://niem.gov/niem/domains/maritime/2.1/mda/3.2"
    xmlns:posex="http://niem.gov/niem/domains/maritime/2.1/position/exchange/3.2"
    xmlns:nc="http://niem.gov/niem/niem_core/2.0"
    xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:ism="urn:us:gov:ic:ism"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema_instance"
    mda:securityIndicatorText="LEI" mda:releasableNationsCode="USA"
    mda:releasableIndicator="true">
<nc:DocumentCreationDate>
   <nc:Date>2011_12_01</nc:Date>
     </nc:DocumentCreationDate>
<nc:DocumentExpirationDate>
   <nc:Date>2012_01_01</nc:Date>
     </nc:DocumentExpirationDate>
<nc:DocumentCreator>
 <nc:EntityOrganization>
   <nc:OrganizationName>Example Organization</nc:OrganizationName>
     </nc:EntityOrganization>
     </nc:DocumentCreator>
   <mda:RecordIDURI>00000001</mda:RecordIDURI>
   <mda:MessageStatusCode>Initial</mda:MessageStatusCode>
   <mda:MessageSourceSystemName>Track Source</mda:MessageSourceSystemName>
   <mda:ICISMMarkings ism:classification="U" ism:ownerProducer="USA" />
 <mda:Expansion>
 <mda:DataField>
   <mda:DataFieldName>An Additional Property</mda:DataFieldName>
   <mda:DataFieldContentText>Content of the Property</mda:DataFieldContentText>
     </mda:DataField>
     </mda:Expansion>
 <mda:Vessel>
 <m:VesselAugmentation>
   <m:VesselCallSignText>XXX33421</m:VesselCallSignText>
   <m:VesselHullNumberText>12345678910A</m:VesselHullNumberText>
   <m:VesselIMONumberText>IMO0000001</m:VesselIMONumberText>
   <m:VesselMMSIText>012345678</m:VesselMMSIText>
```

```
   <m:VesselName>MV  Example</m:VesselName>
    <m:VesselNationalFlagISO3166Alpha3Code>USA</m:VesselNationalFlagISO3166Alpha3Code>
<m:VesselOwner>
<nc:EntityPerson>
<nc:PersonName>
   <nc:PersonFullName>John  Doe</nc:PersonFullName>
     </nc:PersonName>
   <nc:PersonNationalityISO3166Alpha3Code>JPN</nc:PersonNationalityISO3166Alpha3Code>
     </nc:EntityPerson>
     </m:VesselOwner>
   <m:VesselSCONUMText>0000001</m:VesselSCONUMText>
     </m:VesselAugmentation>
     </mda:Vessel>
<mda:Position>
<m:LocationPoint>
<gml:Point  gml:id="tp1">
   <gml:pos>1.0  1.0</gml:pos>
     </gml:Point>
     </m:LocationPoint>
<mda:PositionSpeedMeasure>
   <nc:MeasureText>12</nc:MeasureText>
   <nc:SpeedUnitCode>kt</nc:SpeedUnitCode>
     </mda:PositionSpeedMeasure>
<mda:PositionCourseMeasure>
   <nc:MeasureText>180</nc:MeasureText>
   <m:AngleUnitText>deg</m:AngleUnitText>
     </mda:PositionCourseMeasure>
<mda:PositionHeadingMeasure>
   <nc:MeasureText>180</nc:MeasureText>
   <m:AngleUnitText>deg</m:AngleUnitText>
     </mda:PositionHeadingMeasure>
<mda:PositionNavigationStatus>
   <nc:StatusText>Under  way  using  engines</nc:StatusText>
     </mda:PositionNavigationStatus>
<mda:PositionDateTime>
   <nc:DateTime>20111130T00:00:00Z</nc:DateTime>
     </mda:PositionDateTime>
     </mda:Position>
<mda:Position>
<m:LocationPoint>
<gml:Point  gml:id="tp2">
   <gml:pos>1.0  1.0</gml:pos>
     </gml:Point>
     </m:LocationPoint>
<mda:PositionSpeedMeasure>
```

```
  <nc:MeasureText>12</nc:MeasureText>
  <nc:SpeedUnitCode>kt</nc:SpeedUnitCode>
    </mda:PositionSpeedMeasure>
<mda:PositionCourseMeasure>
  <nc:MeasureText>180</nc:MeasureText>
  <m:AngleUnitText>deg</m:AngleUnitText>
    </mda:PositionCourseMeasure>
<mda:PositionHeadingMeasure>
  <nc:MeasureText>180</nc:MeasureText>
  <m:AngleUnitText>deg</m:AngleUnitText>
    </mda:PositionHeadingMeasure>
<mda:PositionNavigationStatus>
  <nc:StatusText>Under way using engines</nc:StatusText>
    </mda:PositionNavigationStatus>
<mda:PositionDateTime>
  <nc:DateTime>20111201T00:00:00Z</nc:DateTime>
    </mda:PositionDateTime>
    </mda:Position>
<mda:Position>
<m:LocationPoint>
<gml:Point  gml:id="tp3">
  <gml:pos>2.0  2.0</gml:pos>
    </gml:Point>
    </m:LocationPoint>
<mda:PositionSpeedMeasure>
  <nc:MeasureText>12</nc:MeasureText>
  <nc:SpeedUnitCode>kt</nc:SpeedUnitCode>
    </mda:PositionSpeedMeasure>
<mda:PositionCourseMeasure>
  <nc:MeasureText>180</nc:MeasureText>
  <m:AngleUnitText>deg</m:AngleUnitText>
    </mda:PositionCourseMeasure>
<mda:PositionHeadingMeasure>
  <nc:MeasureText>180</nc:MeasureText>
  <m:AngleUnitText>deg</m:AngleUnitText>
    </mda:PositionHeadingMeasure>
<mda:PositionNavigationStatus>
  <nc:StatusText>Under way using engines</nc:StatusText>
    </mda:PositionNavigationStatus>
<mda:PositionDateTime>
  <nc:DateTime>20111202T00:00:00Z</nc:DateTime>
    </mda:PositionDateTime>
    </mda:Position>
    </posex:Message>
```