MITRE

Integrated Cognitive-neuroscience Architectures for Understanding Sensemaking (ICArUS):

Phase 2 Test and Evaluation Development Guide

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1 Overview

The Integrated Cognitive-neuroscience Architectures for Understanding Sensemaking (ICArUS) Program aimed to build computational cognitive-neuroscience models to explain, predict, and emulate the process of human sensemaking – the process of generating hypotheses to explain data that is sparse, noisy, and uncertain. Phase 2 lasted from January, 2013 to June, 2014. In Phase 2, the program employed a challenge problem, based on *geospatial data*, to compare the models' performance to human performance. Here, the term geospatial data includes multiple types of intelligence data, any of which may be represented in a georeferenced framework – for instance, a layer within a GIS-like display. The challenge problem required that participants and models make *sense* of temporal patterns in geospatial data.

This document's primary purpose is to specify the format of the ICArUS Phase 2 Challenge Problem (TACTICS). It was written for software developers, contains development code, and is not meant to stand alone. The document, *ICArUS: Overview of Test and Evaluation (T&E) Materials*, available at http://www.mitre.org/publications, provides a broad overview of MITRE's T&E effort, including a list of all T&E documents and materials produced in Phase 2.

All content following this page is copied verbatim from the original document prepared in December, 2013.

2 Input Format

The Phase 2 Challenge Problem will consist of 5 missions that are a variation on a single basic task.

Each XML exam document begins with an `IcarusExam_Phase2` root element. An *id* attribute provides a unique identifier for the exam, a *name* attribute specifies the exam name, a *programPhaseId* attribute specifies the program phase (e.g., "2" for Phase 2), and an optional *examTimeStamp* attribute indicates when the exam document was last modified (see Figure 1).

For a primer on XML, please see http://www.w3schools.com/web/web_xml.asp. An XML schema defining all XML elements described in this guide is packaged with the challenge problem software, available at http://www.mitre.org/research/technology-transfer.

Next, a `BlueBook` element specifies P_p, the propensity of Red to attack based on Red's vulnerability, P, and the opportunity for Red to inflict damage, U, given Red's tactic(s). The vulnerability P represents Red's vulnerability to Blue's defense (i.e., it's is the probability that Red will *lose* a showdown), and the opportunity U is the utility of the location being attacked. For example, in Figure 1, the BLUEBOOK indicates that Red may be playing with 1 of 2 tactics in Mission 2, "Passive" or "Aggressive". When Red is playing with "Passive" tactics, its probability of attack is 20% (when P is > 25% and U is 2 or 3), 30% (when P is > 25% and U is 4 or 5), 40% (when P <=25% and U is 2 or 3), or 50% (when P <= 25% and U is 4 or 5). That is:

	U = 2 or 3	U = 4 or 5
P > 0.25	0.20	0.30
P ≤ 0.25	0.40	0.50

Note that all probabilities are given in decimal format (in the range [0, 1]), and not percent format. Similarly, when Red is playing with "Aggressive" tactics, the attack probabilities are:

	U = 2 or 3	U = 4 or 5
P > 0.25	0.50	0.60
P ≤ 0.25	0.70	0.80

Next, the BLUEBOOK indicates that Red plays with a "Neutral" tactic in Missions 1 and 3. (Note, since there are two locations in Mission 3 and Red can attack at 1 or neither location, the attack probabilities for Mission 3 are half those in Mission 1.) In Mission 4, the BLUEBOOK indicates that Red may be playing with "Passive" or "Aggressive" tactics. In Mission 5, Red may be playing with "P-sensitive" or "U-sensitive" tactics.

Next, a `SigintReliabilities` element specifies the likelihood that SIGINT reports silence (no activity) or chatter (activity) should Red choose to attack or not. Unlike Red's tactics, which change from mission to mission, the same SIGINT reliabilities are used throughout the exam.

Finally, one or more `Mission` elements specify the missions contained in the exam. Each `Mission` element has an *examId* attribute that specifies the exam it is part of, a *missionType* attribute that specifies the type of mission (e.g., "Mission_1"), and an *id* attribute that provides a unique identifier for the mission. Appendix A provides an entire sample exam.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:IcarusExam_Phase2 xmlns:ns2="IcarusCPD_2"
      xmlns:ns3="IcarusCPD_Base" xmlns:ns4="IcarusCPD_05" xmlns:ns5="IcarusCPD_1"
      examTimeStamp="2013-12-06T11:17:33.684-05:00"
      id="Sample-Exam-DG" name="Sample Exam DG"
      programPhaseId="2">

      <!-- The BLUEBOOK -->
      <BlueBook>
            <Mission_1_Tactics name="Netural" type="Mission_1">
                  <TacticParameters dataConsidered="P_And_U"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                        <AttackProbabilities>0.2 0.4 0.6 0.8</AttackProbabilities>
                  </TacticParameters>
            </Mission_1_Tactics>
            <Mission_2_Tactics name="Passive" type="Mission_2_Passive">
                  <TacticParameters dataConsidered="P_And_U"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                        <AttackProbabilities>0.2 0.3 0.4 0.5</AttackProbabilities>
                  </TacticParameters>
            </Mission_2_Tactics>
            <Mission_2_Tactics name="Aggressive" type="Mission_2_Aggressive">
                  <TacticParameters dataConsidered="P_And_U"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                        <AttackProbabilities>0.5 0.6 0.7 0.8</AttackProbabilities>
                  </TacticParameters>
            </Mission_2_Tactics>
            <Mission_3_Tactics name="Neutral" type="Mission_3">
                  <TacticParameters dataConsidered="P_And_U"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                        <AttackProbabilities>0.1 0.2 0.3 0.4</AttackProbabilities>
                  </TacticParameters>
            </Mission_3_Tactics>
            <Mission_4_Tactics name="Passive" type="Mission_4_Passive">
                  <TacticParameters dataConsidered="P_And_U"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                        <AttackProbabilities>0.2 0.3 0.4 0.5</AttackProbabilities>
                  </TacticParameters>
            </Mission_4_Tactics>
            <Mission_4_Tactics name="Aggressive" type="Mission_4_Aggressive">
                  <TacticParameters dataConsidered="P_And_U"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                        <AttackProbabilities>0.5 0.6 0.7 0.8</AttackProbabilities>
                  </TacticParameters>
            </Mission_4_Tactics>
            <Mission_5_Tactics name="P-Sensitive" type="Mission_5_Psensitive">
                  <TacticParameters dataConsidered="P_Only"
                        high_P_Threshold="0.25" large_U_Threshold="3">
```

```xml
                    <AttackProbabilities>0.4 0.4 0.6 0.6</AttackProbabilities>
                </TacticParameters>
            </Mission_5_Tactics>
            <Mission_5_Tactics name="U-Sensitive" type="Mission_5_Usensitive">
                <TacticParameters dataConsidered="U_Only"
                        high_P_Threshold="0.25" large_U_Threshold="3">
                    <AttackProbabilities>0.2 0.8 0.2 0.8</AttackProbabilities>
                </TacticParameters>
            </Mission_5_Tactics>
    </BlueBook>

    <!-- The SIGINT reliabilities -->
    <SigintReliabilities chatterLikelihood_attack="0.6"
            chatterLikelihood_noAttack="0.2" silenceLikelihood_attack="0.4"
            silenceLikelihood_noAttack="0.8" />

    <!-- Mission 1 -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_1_2_3" missionType="Mission_1" examId="Sample-Exam-DG"
            id="Mission1" programPhaseId="2" name="Mission 1">
            ...
    </Mission>

    <!-- Mission 2 -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_1_2_3" missionType="Mission_2" examId="Sample-Exam-DG"
            id="Mission2" programPhaseId="2" name="Mission 2">
            ...
    </Mission>

    <!-- Mission 3 -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_1_2_3" missionType="Mission_3" examId="Sample-Exam-DG"
            id="Mission3" programPhaseId="2" name="Mission 3">
            ...
    </Mission>

    <!-- Mission 4 -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_4_5_6" maxNumBatchPlots="3" missionType="Mission_4"
            examId="Sample-Exam-2" id="Mission4" programPhaseId="2" name="Mission 4">
            ...
    </Mission>

    <!-- Mission 5 -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_4_5_6" maxNumBatchPlots="4" missionType="Mission_5"
            examId="Sample-Exam-2" id="Mission5" programPhaseId="2" name="Mission 5">
            ...
    </Mission>
</ns2:IcarusExam_Phase2>
```

Figure 1: Overview of an exam document

2.1 Missions 1 - 3

Missions 1-3 are variations on the same basic task; each mission is defined in a `Mission` element of the type *Mission_1_2_3*. Each `Mission` element contains the elements `AoiFile`, `BlueLocationsFile`, and one or more `Trial` elements (one per trial). The `AoiFile` element specifies the file containing Blue's "area of interest" (one per mission); the `BlueLocationsFile` element specifies the file containing Blue's locations (1-2 per trial) (see Section 3.3 for details).

Each trial consists of the following steps (Note: not all steps are present for all missions):

1. **Indicate the most likely tactic Red is playing with (Mission 2 *only*).**

   The `MostLikelyRedTacticProbe` indicates the tactics that the participant may choose from, which are defined in the `BlueBook` element. Note that the first trial of Mission 2 does not contain a `MostLikelyRedTacticProbe`, since no observations have been made.

```
<MostLikelyRedTacticProbe name="Red Style Selection" type="MostLikelyRedTacticSelection">
          <RedTactics>Mission_2_Passive Mission_2_Aggressive</RedTactics>
        </MostLikelyRedTacticProbe>
```

2. **Provide P_p, the probability that Red has the propensity to attack based on the current values of P and U, and the tactics that Red is playing with (or may be playing with in Mission 2) (from the BLUEBOOK).**

   Below, the `Probability` element inside the `AttackPropensityProbe_Pp` element indicates that participants should provide the probability of Red attack at each location, based on the evidence provided in `Datum` (OSINT, IMINT, and the BLUEBOOK). The *targetSum* and *normalizationConstraint* attributes indicate that the sum of all probabilities should be less than or equal to 100%.

```
<AttackPropensityProbe_Pp targetSum="100.0"
     normalizationConstraint="LessThanOrEqualTo"
     id="Pp" name="P(Attack | IMINT, OSINT)" type="AttackProbabilityReport_Pp">
     <Datum locationId="1-1" datumType="OSINT"/>
     <Datum locationId="1-1" datumType="IMINT"/>
     <Datum datumType="BlueBook"/>
     <Probability redAction="Attack" locationIndex="0" locationId="1-1"/>
</AttackPropensityProbe_Pp>
```

3. **Receive HUMINT, the probability that Red has the capability to attack.**

   HUMINT information is specified in the `Humint` element using the attribute *redCapability_Pc*. Note that the value is in decimal format (in the range [0, 1]).

```
<Humint redCapability_Pc="1.0">
```

```
        <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
</Humint>
```

4. **Provide P$_{p,c}$, the probability that Red will attack given its propensity and capability to attack.**

Below, the `Probability` element inside the `AttackPropensityProbe_Ppc` element indicates that participants should provide the probability of Red attack at each location, based on the evidence provided in `Datum` (P$_p$ and HUMINT).

```
<AttackProbabilityProbe_Ppc targetSum="100.0"
      normalizationConstraint="LessThanOrEqualTo"
      id="Ppc" name="P(Attack | HUMINT, IMINT, OSINT)" type="AttackProbabilityReport_Ppc">
      <Datum locationId="1-1"
             datumType="AttackProbabilityReport_Propensity"
             datumId="Pp"/>
      <Datum locationId="1-1" datumType="HUMINT"/>
      <Probability redAction="Attack" locationIndex="0" locationId="1-1"/>
</AttackProbabilityProbe_Ppc>
```

5. **Select the location at which to obtain SIGINT (Mission 3 *only*).**

The `SigintSelectionProbe` element indicates that participants should select SIGINT at one location (the locations that may be selected are specified by `LocationIds`). These locations, and SIGINT activity (chatter or silence) at these locations, are specified in the feature vector for each mission (see Section 3.3.2).

```
<SigintSelectionProbe numSigintSelections="1" name="SIGINT Selection"
      type="SigintSelection">
      <LocationIds>1-1 1-2</LocationIds>
      <LocationIndexes>0 1</LocationIndexes>
</SigintSelectionProbe>
```

6. **Provide P$_t$, the probability of Red attack as signaled by SIGINT (Mission 1 *only*).**

Below, the `Probability` element inside the `AttackPropensityProbe_Pt` element indicates that participants should provide the probability of Red attack at each location, based on the evidence provided in `Datum` (SIGINT).

```
<AttackProbabilityProbe_Pt targetSum="100.0"
      normalizationConstraint="LessThanOrEqualTo"
       id="Pt" name="P(Attack | SIGINT)" type="AttackProbabilityReport_Pt">
      <Datum locationId="1-1" datumType="SIGINT"/>
      <Datum datumType="SIGINTReliability"/>
      <Probability redAction="Attack" locationIndex="0" locationId="1-1"/>
</AttackProbabilityProbe_Pt>
```

7. **Provide P$_{t,p,c}$, the probability of Red attack given its activity, propensity, and capability.**

The $AttackPropensityProbe\_Ptpc$ element contains a Probability element that indicates that participants should provide the probability of Red attack at each location, based on the evidence provided in Datum (either $P_{p,c}$ and P_t at each location (Mission 1), or $P_{p,c}$ and SIGINT at each location (Missions 2 and 3)).

```
<AttackProbabilityProbe_Ptpc targetSum="100.0"
      normalizationConstraint="LessThanOrEqualTo"
      id="Ptpc" name="P(Attack | SIGINT, HUMINT, IMINT, OSINT)"
      type="AttackProbabilityReport_Ptpc">
      <Datum locationId="1-1"
            datumType="AttackProbabilityReport_Capability_Propensity"
            datumId="Ppc"/>
      <Datum locationId="1-1"
            datumType="AttackProbabilityReport_Activity" datumId="Pt"/>
      <Probability redAction="Attack" locationIndex="0" locationId="1-1"/>
</AttackProbabilityProbe_Ptpc>
```

8. **Receive the Blue action at the location (Mission 1), or select the Blue action at each location (Missions 2 and 3).**

    In Mission 1, the BlueAction element provides the Blue action that was taken at each location (*dataProvidedToParticipant* = "true" indicates that the participant does *not* select the Blue action).

```
<BlueActionSelection name="Blue Action Selection" type="BlueActionSelection"
      dataProvidedToParticipant="true">
      <BlueAction locationIndex="0" locationId="1-1" action="Do_Not_Divert"/>
</BlueActionSelection>
```

    In Missions 2 and 3, the participant is asked to choose an action (Divert, Not Divert) at the locations specified in each BlueAction element. The Datum element indicates the datum that should be considered at each location when selecting an action.

```
<BlueActionSelection name="Blue Action Selection" type="BlueActionSelection"
      dataProvidedToParticipant="false">
      <Datum locationId="1-1" datumType="IMINT" />
      <Datum locationId="1-1"
            datumType="AttackProbabilityReport_Activity_Capability_Propensity"
            datumId="Ptpc"/>
      <BlueAction locationIndex="0" locationId="1-1"/>
</BlueActionSelection>
```

9. **Receive the Red action at each location and award points.**

    The RedActionSelection element provides the Red action that was taken at each location ("Attack" or "Do_Not_Attack"). In the case of a showdown, the ShowdownWinner element indicates who (Blue or Red) will win the showdown. Note that for formal assessments of model

performance, the ShowdownWinner element may be withheld and instead provided via the Test Harness (TH). The TH will also provide points awarded per trial (Red and Blue), as well as the cumulative score (Red and Blue) for the mission to date. Details will be provided in a separate TH document.

```xml
<RedActionSelection dataProvidedToParticipant="true" type="RedActionSelection">
    <RedAction locationIndex="0" locationId="1-1" action="Do_Not_Attack"/>
    </RedActionSelection>
 <ShowdownWinner winner="Red" locationIndex="0" locationId="1-1"/>
```

Appendix A contains a sample input file, with examples from Missions 1-3, for reference.

2.2 Missions 4 – 5

Missions 4 - 5 are similar to Missions 1 - 3 with the addition of a new probe to assess Red's tactics. In Missions 4 - 5, participants are asked to assess the probability that Red is playing with given tactics – "Passive or "Aggressive" in Mission 4 and "P-sensitive" or "U-sensitive" in Mission 5 – in the RedTacticsProbe element (participants are not asked in the first trial since no observations have been made). The RedTacticsProbe element contains two Probability elements indicating that participants should provide the probability that Red is playing with each tactic. Each tactic is defined in the BlueBook element for the exam (see Section 3).

The RedTacticsProbe element may also contain a BatchPlotProbe element indicating that a batch plot can be created to review Red's attack history. The PreviousTrials element indicates the trials that can be reviewed (e.g., below, trial 1). The maximum number of batch plots that the participant may create in a Mission is specified in the *maxNumBatchPlots* attribute in the Mission element (see Figure 1). If the maxNumBatchPlots attribute is not present, the participant is not limited in the number of batch plots they may create. Currently, participants create 3 batch plots in Mission 4 (on trials 10, 20, and 30), and 4 batch plots in Mission 5 (on trials 10, 20, 30, and 40). Batch plots may not be created on any other trial.

```xml
<RedTacticsProbe xsi:type="ns2:RedTacticProbabilityReportProbe"
    targetSum="100.0" normalizationConstraint="EqualTo" name="P(Red Style) Report"
    type="RedTacticsProbabilityReport">
    <BatchPlotProbe blueLocationsPerTrial="1" optional="false" type="BatchPlotProbe">
        <PreviousTrials>1</PreviousTrials>
    </BatchPlotProbe>
    <Datum datumType="BatchPlots" />
    <Datum datumType="BlueBook" />
    <Probability redTactic="Mission_4_Passive" />
    <Probability redTactic="Mission_4_Aggressive" />
</RedTacticsProbe>
```

Since the focus of Missions 4 - 5 is on assessing Red's tactics, participants make one report on probability of attack based on IMINT and OSINT, as indicated by the `AttackProbabilityProbe_Pp` element.

```xml
<AttackPropensityProbe_Pp id="Pp"
      normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
      name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
      <Datum datumType="OSINT" locationId="1-1" />
      <Datum datumType="IMINT" locationId="1-1" />
      <Datum datumType="BlueBook" />
      <Probability locationId="1-1" locationIndex="0"
            redAction="Attack" />
</AttackPropensityProbe_Pp>
```

As in Missions 1 - 3, each trial ends with participants selecting a Blue action. Appendix A contains a sample input file, with examples from Missions 4 - 5, for reference.

2.3 Feature Vector Formats

To simplify the development of the problem, and to make it easier to extend the problem in the future, we have developed our own XML feature vector format. Feature vectors files will no longer be provided in CSV or KML format. To facilitate interoperability, as well as visualizations with other geospatial systems, the developer's toolbox will support the translation of any Phase 2 feature vector file into an equivalent KML representation.

Each mission in the Phase 2 Challenge Problem contains two feature vector files defining the "area of interest" for the mission and "Blue's location(s)" for each trial in the mission (e.g., Mission_1_Area_Of_Interest.xml and Mission_1_Blue_Locations.xml respectively). These formats are defined in Sections 3.3.1 and 3.3.2 below. Note that all feature vector elements are defined in the same schema that contains the exam elements.

2.3.1 Feature Vector Formats: Area of Interest

The "area of interest" is simply a geographic region and is fixed for the duration of a mission. The area of interest is specified in an XML document containing an `AreaOfInterest` root element (see Figure 2). The `AreaOfInterest` element contains *topLeftLon*, *topLeftLat*, *bottomLeftLat*, and *bottomLeftLon* attributes that define each corner point. Models are not expected to use this information. Note: while the areas of interest may be actual geographic locations, these locations, and their relationship with respect to one another, are irrelevant and should not be considering during an exam.

The `AreaofInterest` element may also contain *imintRadius_miles* and *sigintRadius_miles* attributes, which specify the default radii for IMINT and SIGINT circles respectively (drawn on the map GUI). Models are not expected to use this information.

The SceneImageFile element specifies the image (map) file (typically in PNG format) scaled to fit within the area of interest bounds. This image typically contains roads, buildings, and other terrain features. At present, the primary purpose of the image is to create a sense of realism for human participants. The density of buildings in the image is used to compute the opportunity U at each location. U is provided directly in the "Blue Locations" document (see Section 3.3.2 below). Thus, models are not expected or required to process this image.

The BlueRegion element contains three or more Coordinate elements that define a polygon representing Blue's territory for the mission. The shortest line distance from each location to the border of the Blue's territory is pre-computed and used to compute vulnerability P (see Section 3.3.2 below). Thus, models do not have to process the BlueRegion element. The Blue region is, however, displayed on the map GUI for human participants.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:AreaOfInterest xmlns:ns2="IcarusCPD_2" topLeftLon="-71.0717455140345"
topLeftLat="42.4088540713865" bottomRightLon="-71.0630111562008"
bottomRightLat="42.4024047168992"
      imintRadius_miles="0.025" sigintRadius_miles="0.050">
      <SceneImageFile fileUrl="Mission1_GrayScale.png"/>
      <BlueRegion>
            <OuterBounds>
                  <Coordinate lat="42.4037807823262" lon="-71.0642020394574" />
                  <Coordinate lat="42.4038868528648" lon="-71.0684590239438" />
                  <Coordinate lat="42.4050269926053" lon="-71.0684258781473" />
                  <Coordinate lat="42.4065580822776" lon="-71.0707529076521" />
                  <Coordinate lat="42.4087080349297" lon="-71.0690653849561" />
                  <Coordinate lat="42.408707899201" lon="-71.0655470262159" />
                  <Coordinate lat="42.4058249720415" lon="-71.0655473110471" />
                  <Coordinate lat="42.4058249305312" lon="-71.0648194082082" />
                  <Coordinate lat="42.4051571244464" lon="-71.0646650799413" />
                  <Coordinate lat="42.405132667745" lon="-71.0642680491677" />
                  <Coordinate lat="42.4037807823262" lon="-71.0642020394574" />
            </OuterBounds>
      </BlueRegion>
</ns2:AreaOfInterest>
```

Figure 2: Example area of interest feature vector document

2.3.2 Feature Vector Formats: Blue Locations

Blue's locations for each trial are specified in an XML document containing a FeatureContainer root element (see Figure 3). The FeatureContainer element contains BlueLocation elements for each trial in the mission. In Missions 1, 2, 4, and 5, there is one location for each trial; in Mission 3, there are two locations for each trial. Each BlueLocation element contains a *trialNumber* attribute that indicates the trial the location is for and an *id* attribute that specifies the location ID. Locations are always referred to by this ID.

Next, a `Coordinate` element defines the geographic coordinates of the location (all locations are located within the area of interest). The `Osint` element specifies the nearest border point (`BlueRegionCoordinate`), as well as Red's vulnerability P in the *vulnerability* attribute. Note that P is in decimal format (in the range [0, 1]). The `Imint` element specifies the opportunity U in the *opportunity* attribute. The `Sigint` element specifies whether Red activity was detected in the *redActivityDetected* attribute.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:FeatureContainer xmlns:ns2="IcarusCPD_2">
    <ns2:BlueLocation trialNumber="1" id="1-1">
        <Coordinate lon="-71.0653930698593" lat="42.4042206227966"/>
        <Osint vulnerability="0.11936008179624569" radius="0.063553228">
            <BlueRegionCoordinate lon="-71.0654090204027" lat="42.4038096240422"/>
        </Osint>
        <Imint opportunity="5" density="0.98134"/>
        <Sigint redActivityDetected="false"/>
    </ns2:BlueLocation>
    <ns2:BlueLocation trialNumber="2" id="2-1">
        <Coordinate lon="-71.0651393626425" lat="42.4047010963748"/>
        <Osint vulnerability="0.16330383067108623" radius="0.089147137">
            <BlueRegionCoordinate lon="-71.0646588571275" lat="42.4051541855537"/>
        </Osint>
        <Imint opportunity="5" density="0.98244"/>
        <Sigint redActivityDetected="true"/>
    </ns2:BlueLocation>
    …
</ns2:FeatureContainer>
```
Figure 3: Example Blue locations feature vector document

3 Output Format

Similar to Phase 1, human and model responses will be recorded in the same XML document that defines the exam. A `ResponseGenerator` element at the beginning of the document provides information about the participant or model that generated the responses; a unique `SiteId` has been provided to each team, and each team may use the `ResponseGeneratorId` element to specify the model ID (for example, a model running with different parameters). Please do not use an underscore character ('_') in the site ID or response generator ID names as the underscore is used as a field delineator.

The document may also contain `StartTime` and `EndTime` elements that indicate when the participant or model started and finished the exam. The `Mission` elements for each mission may also contain `StartTime` and `EndTime` elements that indicate when the participant or model started and finished the mission. Responses to the trials in each mission are contained within the `Mission` element and are described in Sections 4.1 – 4.2 below.

Unlike previous versions of the Challenge Problem that used separate output XML elements, participant responses are now contained in the same XML elements that specify the input. This simplification should make providing responses more straightforward and less error-prone. All probe elements within a trial that contain a response have a *trialPartTime_ms* attribute that indicates the amount of time spent responding to the probe. This data is captured for human participants and is not expected to be reported by models. Each `Trial` element also contains a *trialTime_ms* attribute that indicates the total time the participant spent on the trial.

As in Phase 1, models will be expected to upload a response to the Test Harness after each trial. Models may either send the entire XML exam document with responses up to and including the response to the current trial in the current mission, or they may send an XML document with a `Mission` root element containing responses for all trials in the mission up to and including the response to the current trial. Please consult the Test Harness documentation for more information. Appendix B contains a sample document with responses to all trials in all missions. While the example given in Appendix B shows responses for all trials in all missions in the exam, a model should only send an exam or mission document containing responses up to and including the response for the current trial.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:IcarusExam_Phase2 xmlns:ns2="IcarusCPD_2"
      xmlns:ns3="IcarusCPD_Base" xmlns:ns4="IcarusCPD_05" xmlns:ns5="IcarusCPD_1"
      xmlns:ns6="IcarusUIStudy" endTime="2013-12-06T15:34:25.580-05:00"
      examTimeStamp="2013-12-06T11:17:33.684-05:00" id="Sample-Exam-DG"
      name="Sample Exam DG"
      programPhaseId="2" startTime="2013-12-06T15:29:14.459-05:00">

      <!-- ICArUS Model Information -->
      <ResponseGenerator>
            <HumanSubject>false</HumanSubject>
            <ResponseGeneratorId>DEMO</ResponseGeneratorId>
            <SiteId>MITRE</SiteId>
      </ResponseGenerator>

      <!-- Mission 1 Response -->
      <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_1_2_3" missionType="Mission_1" programPhaseId="2"
            id="Mission1" examId="Sample-Exam-DG"
      startTime="2013-12-06T15:29:14.459-05:00"
      endTime="2013-12-06T15:30:06.960-05:00" name="Mission 1">
            ...
      </Mission>
</ns2:IcarusExam_Phase2>
```
Figure 4: Overview of an exam document with response data

3.1 Missions 1 - 3 Output Format

In Missions 1-3, probe elements that contain response data include:

1. The `MostLikelyRedTacticProbe` element contains a `MostLikelyRedTactic` element, which indicates the Red tactic chosen by the model/participant (Mission 2 only).

```
<MostLikelyRedTacticProbe name="Red Style Selection" type="MostLikelyRedTacticSelection"
      trialPartTime_ms="1997">
      <RedTactics>Mission_2_Passive Mission_2_Aggressive</RedTactics>
      <MostLikelyRedTactic>Mission_2_Passive</MostLikelyRedTactic>
</MostLikelyRedTacticProbe>
```

2. The `AttackPropensityProbe_Pp` element contains `Probability` elements for each location. Each `Probability` element contains a *probability* attribute that indicates the probability of Red attack (in percent format) specified by the participant. Note that in Mission 3, which contains two locations, the probability of attack at each location does not have to sum to 100% since Red can attack at one (or neither) location. This is indicated by the "LessThanOrEqualTo" value of the *normalizationConstraint* attribute.

   The *time_ms* attribute is captured for human participants and indicates the total amount of time the participant spent adjusting the probability control. The `AdjustmentSequence` elements indicate the order in which human participants adjust each probability control. In this case, the human subject first adjusted control 1 (with index 0) and then adjusted control 2 (with index 1). These elements only capture the first time human participants adjust each control. If the participant does not adjust a control, it will not be present in an `AdjustmentSequence` element.

```
<AttackPropensityProbe_Pp id="Pp"
      normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
      name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
      trialPartTime_ms="17731">
      <Datum datumType="OSINT" locationId="1-1" />
      <Datum datumType="IMINT" locationId="1-1" />
      <Datum datumType="OSINT" locationId="1-2" />
      <Datum datumType="IMINT" locationId="1-2" />
      <Datum datumType="BlueBook" />
      <AdjustmentSequence index="0" timeStamp="1386361867203" />
      <AdjustmentSequence index="1" timeStamp="1386361876879" />
      <Probability locationId="1-1" locationIndex="0"
            redAction="Attack" probability="40.0"
            time_ms="9676" />
      <Probability locationId="1-2" locationIndex="1"
            redAction="Attack" probability="10.0"
            time_ms="8055" />
</AttackPropensityProbe_Pp>
```

3. The `AttackPropensityProbe_Ppc` element contains `Probability` elements for each location. The format is the same as (2) above.

4. The `SigintSelectionProbe` element contains a `SelectedLocationIds` element that indicates the ID of the location where SIGINT was selected by the participant/model.

```
<SigintSelectionProbe numSigintSelections="1"
      name="SIGINT Selection" type="SigintSelection" trialPartTime_ms="2527">
      <LocationIds>1-1 1-2</LocationIds>
      <LocationIndexes>0 1</LocationIndexes>
      <SelectedLocationIds>1-2</SelectedLocationIds>
</SigintSelectionProbe>
```

5. The `AttackPropensityProbe_Pt` element contains `Probability` elements for each location. The format is the same as (2) above (Mission 1 only).

6. The `AttackPropensityProbe_Ptpc` element contains `Probability` elements for each location. The format is the same as (2) above.

7. The `BlueActionSelection` element contains `BlueAction` elements for each location. Each `BlueAction` element contains a *locationId* attribute that indicates the location, and an *action* attribute that indicates the Blue action taken at the location ("Divert" or "Do_Not_Divert").

```
<BlueActionSelection name="Blue Action Selection" type="BlueActionSelection"
      dataProvidedToParticipant="false">
      <BlueAction locationIndex="0" locationId="1-1" action="Do_Not_Divert" />
</BlueActionSelection>
```

Appendix B contains a sample output file, with examples from Missions 1-3, for reference.

3.2 Missions 4 - 5 Output Format

In Missions 4 - 5, a `RedTacticsProbe` element contains two `Probability` elements for each possible set of Red tactics ("Passive or "Aggressive" in Mission 4 and "P-sensitive" or "U-sensitive" in Mission 5). Each `Probability` element contains a *probability* attribute that indicates the probability that Red is playing with the indicated tactics (in percent format). Note that the probabilities must sum to exactly 100% since Red must be playing with one tactic or the other. The `AdjustmentSequence` elements indicate the order in which human participants adjusted each probability control (see section 4.1 above for details). If participants choose to create a batch plot, the number of trials they reviewed is indicated by the *numPreviousTrialsSelected* attribute in the `BatchPlotProbe` element. For human participants, the Blue locations clicked on the map (if any) are recorded in the `BlueLocationsClicked` element, and the sequence of *Backward* and *Forward* button presses is recorded in the `ButtonPressSequence` element.

```
<RedTacticsProbe xsi:type="ns2:RedTacticProbabilityReportProbe"
      targetSum="100.0" normalizationConstraint="EqualTo" name="P(Red Style) Report"
      type="RedTacticsProbabilityReport">
      <BatchPlotProbe blueLocationsPerTrial="1" optional="false"
```

```xml
            numPreviousTrialsSelected="1" type="BatchPlotProbe">
            <BlueLocationsClicked>1-1</BlueLocationsClicked>
            <ButtonPressSequence>Backward</ButtonPressSequence>
            <PreviousTrials>1</PreviousTrials>
        </BatchPlotProbe>
        <Datum datumType="BatchPlots" />
        <Datum datumType="BlueBook" />
        <AdjustmentSequence index="0" timeStamp="1386361994905" />
        <AdjustmentSequence index="1" timeStamp="1386362003399" />
        <Probability redTactic="Mission_4_Passive" time_ms="1893"
            probability="50.0" />
        <Probability redTactic="Mission_4_Aggressive" time_ms="1459"
            probability="50.0" />
</RedTacticsProbe>
```

Appendix B contains a sample output file, with examples from Missions 4 -5, for reference.

4 Appendices

4.1 Appendix A: Example Input File

Note: Some probes, not discussed above, are utilized by the GUI to present information to human participants, e.g., OsintPresentation, ImintPresentation, and HumintPresentation, and SigintPresentation, and need not be utilized by models. For instance, OsintPresentation cues the GUI to display OSINT on the map, but OSINT can be read directly from the feature vector (e.g., Mission_1_Blue_Locations.xml in Mission 1).

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:IcarusExam_Phase2 xmlns:ns2="IcarusCPD_2" xmlns:ns3="IcarusCPD_Base"
      xmlns:ns4="IcarusCPD_05" xmlns:ns5="IcarusCPD_1"
      examTimeStamp="2013-12-06T11:17:33.684-05:00" id="Sample-Exam-DG"
      name="Sample Exam DG" programPhaseId="2"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="IcarusCPD_Base IcarusBaseSchema.xsd
      IcarusCPD_1 IcarusCPD_1_Schema.xsd IcarusCPD_2 IcarusCPD_2_Schema.xsd">
    <NormalizationMode>NormalizeDuringManual</NormalizationMode>

    <!-- The BLUEBOOK -->
    <BlueBook>
        <Mission_1_Tactics name="Netural" type="Mission_1">
            <TacticParameters dataConsidered="P_And_U"
             high_P_Threshold="0.25" large_U_Threshold="3">
                <AttackProbabilities>0.2 0.4 0.6 0.8</AttackProbabilities>
            </TacticParameters>
        </Mission_1_Tactics>
        <Mission_2_Tactics name="Passive" type="Mission_2_Passive">
            <TacticParameters dataConsidered="P_And_U"
             high_P_Threshold="0.25" large_U_Threshold="3">
                <AttackProbabilities>0.2 0.3 0.4 0.5</AttackProbabilities>
            </TacticParameters>
        </Mission_2_Tactics>
        <Mission_2_Tactics name="Aggressive" type="Mission_2_Aggressive">
            <TacticParameters dataConsidered="P_And_U"
             high_P_Threshold="0.25" large_U_Threshold="3">
                <AttackProbabilities>0.5 0.6 0.7 0.8</AttackProbabilities>
            </TacticParameters>
        </Mission_2_Tactics>
        <Mission_3_Tactics name="Neutral" type="Mission_3">
            <TacticParameters dataConsidered="P_And_U"
             high_P_Threshold="0.25" large_U_Threshold="3">
                <AttackProbabilities>0.1 0.2 0.3 0.4</AttackProbabilities>
            </TacticParameters>
        </Mission_3_Tactics>
        <Mission_4_Tactics name="Passive" type="Mission_4_Passive">
            <TacticParameters dataConsidered="P_And_U"
             high_P_Threshold="0.25" large_U_Threshold="3">
                <AttackProbabilities>0.2 0.3 0.4 0.5</AttackProbabilities>
```

```xml
                    </TacticParameters>
            </Mission_4_Tactics>
            <Mission_4_Tactics name="Aggressive" type="Mission_4_Aggressive">
                <TacticParameters dataConsidered="P_And_U"
                 high_P_Threshold="0.25" large_U_Threshold="3">
                    <AttackProbabilities>0.5 0.6 0.7 0.8</AttackProbabilities>
                </TacticParameters>
            </Mission_4_Tactics>
            <Mission_5_Tactics name="P-Sensitive" type="Mission_5_Psensitive">
                <TacticParameters dataConsidered="P_Only"
                 high_P_Threshold="0.25" large_U_Threshold="3">
                    <AttackProbabilities>0.4 0.4 0.6 0.6</AttackProbabilities>
                </TacticParameters>
            </Mission_5_Tactics>
            <Mission_5_Tactics name="U-Sensitive" type="Mission_5_Usensitive">
                <TacticParameters dataConsidered="U_Only"
                 high_P_Threshold="0.25" large_U_Threshold="3">
                    <AttackProbabilities>0.2 0.8 0.2 0.8</AttackProbabilities>
                </TacticParameters>
            </Mission_5_Tactics>
    </BlueBook>

    <!-- The SIGINT reliabilities -->
    <SigintReliabilities chatterLikelihood_attack="0.6"
       chatterLikelihood_noAttack="0.2" silenceLikelihood_attack="0.4"
       silenceLikelihood_noAttack="0.8"/>

    <!-- Mission 1 -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:type="ns2:Mission_1_2_3" missionType="Mission_1"
       programPhaseId="2" id="Mission1" examId="Sample-Exam-DG" name="Mission 1">
        <AoiFile fileUrl="Mission1_Area_Of_Interest.xml"/>
        <BlueLocationsFile fileUrl="Mission1_Blue_Locations.xml"/>
        <RedTactic>Mission_1</RedTactic>
        <Trial trialNum="1">
            <Humint redCapability_Pc="1.0">
                <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
            </Humint>
            <OsintPresentation>
                <LocationIds>1-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
            </OsintPresentation>
            <ImintPresentation>
                <LocationIds>1-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
            </ImintPresentation>
            <AttackPropensityProbe_Pp id="Pp"
             normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
             name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
                <Datum datumType="OSINT" locationId="1-1"/>
                <Datum datumType="IMINT" locationId="1-1"/>
                <Datum datumType="BlueBook"/>
                <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
            </AttackPropensityProbe_Pp>
            <HumintPresentation>
```

```xml
            <LocationIds>1-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </HumintPresentation>
        <AttackProbabilityProbe_Ppc id="Ppc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|HUMINT, IMINT, OSINT)" type="AttackProbabilityReport_Ppc">
            <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
                locationId="1-1"/>
            <Datum datumType="HUMINT" locationId="1-1"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackProbabilityProbe_Ppc>
        <SigintPresentation>
            <LocationIds>1-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </SigintPresentation>
        <AttackProbabilityProbe_Pt id="Pt"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|SIGINT)" type="AttackProbabilityReport_Pt">
            <Datum datumType="SIGINT" locationId="1-1"/>
            <Datum datumType="SIGINTReliability"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackProbabilityProbe_Pt>
        <AttackProbabilityProbe_Ptpc id="Ptpc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
         type="AttackProbabilityReport_Ptpc">
            <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="1-1"/>
            <Datum datumId="Pt" datumType="AttackProbabilityReport_Activity"
                locationId="1-1"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackProbabilityProbe_Ptpc>
        <BlueActionSelection dataProvidedToParticipant="true"
         name="Blue Action Selection" type="BlueActionSelection">
            <BlueAction action="Do_Not_Divert" locationId="1-1" locationIndex="0"/>
        </BlueActionSelection>
        <RedActionSelection dataProvidedToParticipant="true"
         type="RedActionSelection">
            <RedAction action="Attack" locationId="1-1" locationIndex="0"/>
        </RedActionSelection>
        <ShowdownWinner locationId="1-1" locationIndex="0" winner="Red"/>
    </Trial>
    <Trial trialNum="2">
        <Humint redCapability_Pc="0.4">
            <numTrialsSinceLastAttack>1</numTrialsSinceLastAttack>
        </Humint>
        <OsintPresentation>
            <LocationIds>2-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </OsintPresentation>
        <ImintPresentation>
            <LocationIds>2-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </ImintPresentation>
```

```xml
<AttackPropensityProbe_Pp id="Pp"
 normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
 name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
    <Datum datumType="OSINT" locationId="2-1"/>
    <Datum datumType="IMINT" locationId="2-1"/>
    <Datum datumType="BlueBook"/>
    <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
</AttackPropensityProbe_Pp>
<HumintPresentation>
    <LocationIds>2-1</LocationIds>
    <LocationIndexes>0</LocationIndexes>
</HumintPresentation>
<AttackProbabilityProbe_Ppc id="Ppc"
 normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
 name="P(Attack|HUMINT, IMINT, OSINT)" type="AttackProbabilityReport_Ppc">
    <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
        locationId="2-1"/>
    <Datum datumType="HUMINT" locationId="2-1"/>
    <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
</AttackProbabilityProbe_Ppc>
<SigintPresentation>
    <LocationIds>2-1</LocationIds>
    <LocationIndexes>0</LocationIndexes>
</SigintPresentation>
<AttackProbabilityProbe_Pt id="Pt"
 normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
 name="P(Attack|SIGINT)" type="AttackProbabilityReport_Pt">
    <Datum datumType="SIGINT" locationId="2-1"/>
    <Datum datumType="SIGINTReliability"/>
    <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
</AttackProbabilityProbe_Pt>
<AttackProbabilityProbe_Ptpc id="Ptpc"
 normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
 name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
  type="AttackProbabilityReport_Ptpc">
    <Datum datumId="Ppc"
        datumType="AttackProbabilityReport_Capability_Propensity"
        locationId="2-1"/>
    <Datum datumId="Pt" datumType="AttackProbabilityReport_Activity"
        locationId="2-1"/>
    <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
</AttackProbabilityProbe_Ptpc>
<BlueActionSelection dataProvidedToParticipant="true"
 name="Blue Action Selection" type="BlueActionSelection">
    <BlueAction action="Do_Not_Divert" locationId="2-1" locationIndex="0"/>
</BlueActionSelection>
<RedActionSelection dataProvidedToParticipant="true"
 type="RedActionSelection">
    <RedAction action="Do_Not_Attack" locationId="2-1" locationIndex="0"/>
</RedActionSelection>
<ShowdownWinner locationId="2-1" locationIndex="0" winner="Red"/>
    </Trial>
</Mission>

<!-- Mission 2 -->
```

```xml
<Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:type="ns2:Mission_1_2_3" missionType="Mission_2"
  programPhaseId="2" id="Mission2" examId="Sample-Exam-DG" name="Mission 2">
    <AoiFile fileUrl="Mission2_Area_Of_Interest.xml"/>
    <BlueLocationsFile fileUrl="Mission2_Blue_Locations.xml"/>
    <RedTactic>Mission_2_Aggressive</RedTactic>
    <Trial trialNum="1">
        <Humint redCapability_Pc="1.0">
            <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
        </Humint>
        <OsintPresentation>
            <LocationIds>1-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </OsintPresentation>
        <ImintPresentation>
            <LocationIds>1-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </ImintPresentation>
        <AttackPropensityProbe_Pp id="Pp"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
            <Datum datumType="OSINT" locationId="1-1"/>
            <Datum datumType="IMINT" locationId="1-1"/>
            <Datum datumType="BlueBook"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackPropensityProbe_Pp>
        <HumintPresentation>
            <LocationIds>1-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </HumintPresentation>
        <AttackProbabilityProbe_Ppc id="Ppc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|HUMINT, IMINT, OSINT)" type="AttackProbabilityReport_Ppc">
            <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
                locationId="1-1"/>
            <Datum datumType="HUMINT" locationId="1-1"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackProbabilityProbe_Ppc>
        <SigintPresentation>
            <LocationIds>1-1</LocationIds>
            <LocationIndexes>0</LocationIndexes>
        </SigintPresentation>
        <AttackProbabilityProbe_Ptpc id="Ptpc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
         type="AttackProbabilityReport_Ptpc">
            <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="1-1"/>
            <Datum datumType="SIGINT" locationId="1-1"/>
            <Datum datumType="SIGINTReliability"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackProbabilityProbe_Ptpc>
        <BlueActionSelection dataProvidedToParticipant="false"
         name="Blue Action Selection" type="BlueActionSelection">
```

```xml
                <BlueAction locationId="1-1" locationIndex="0"/>
        </BlueActionSelection>
        <RedActionSelection dataProvidedToParticipant="true"
         type="RedActionSelection">
                <RedAction action="Attack" locationId="1-1" locationIndex="0"/>
        </RedActionSelection>
        <ShowdownWinner locationId="1-1" locationIndex="0" winner="Blue"/>
    </Trial>
    <Trial trialNum="2">
        <Humint redCapability_Pc="0.4">
                <numTrialsSinceLastAttack>1</numTrialsSinceLastAttack>
        </Humint>
        <OsintPresentation>
                <LocationIds>2-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
        </OsintPresentation>
        <ImintPresentation>
                <LocationIds>2-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
        </ImintPresentation>
        <MostLikelyRedTacticProbe name="Red Style Selection"
         type="MostLikelyRedTacticSelection">
                <RedTactics>Mission_2_Passive Mission_2_Aggressive</RedTactics>
        </MostLikelyRedTacticProbe>
        <AttackPropensityProbe_Pp id="Pp"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
                <Datum datumType="OSINT" locationId="2-1"/>
                <Datum datumType="IMINT" locationId="2-1"/>
                <Datum datumType="BlueBook"/>
                <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
        </AttackPropensityProbe_Pp>
        <HumintPresentation>
                <LocationIds>2-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
        </HumintPresentation>
        <AttackProbabilityProbe_Ppc id="Ppc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|HUMINT, IMINT, OSINT)" type="AttackProbabilityReport_Ppc">
                <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
                       locationId="2-1"/>
                <Datum datumType="HUMINT" locationId="2-1"/>
                <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
        </AttackProbabilityProbe_Ppc>
        <SigintPresentation>
                <LocationIds>2-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
        </SigintPresentation>
        <AttackProbabilityProbe_Ptpc id="Ptpc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
         type="AttackProbabilityReport_Ptpc">
                <Datum datumId="Ppc"
                    datumType="AttackProbabilityReport_Capability_Propensity"
                    locationId="2-1"/>
```

```xml
                <Datum datumType="SIGINT" locationId="2-1"/>
                <Datum datumType="SIGINTReliability"/>
                <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
            </AttackProbabilityProbe_Ptpc>
            <BlueActionSelection dataProvidedToParticipant="false"
             name="Blue Action Selection" type="BlueActionSelection">
                <BlueAction locationId="2-1" locationIndex="0"/>
            </BlueActionSelection>
            <RedActionSelection dataProvidedToParticipant="true"
             type="RedActionSelection">
                <RedAction action="Attack" locationId="2-1" locationIndex="0"/>
            </RedActionSelection>
            <ShowdownWinner locationId="2-1" locationIndex="0" winner="Red"/>
        </Trial>
</Mission>

<!-- Mission 3 -->
<Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:type="ns2:Mission_1_2_3" missionType="Mission_3"
   programPhaseId="2" id="Mission3" examId="Sample-Exam-DG" name="Mission 3">
    <AoiFile fileUrl="Mission3_Area_Of_Interest.xml"/>
    <BlueLocationsFile fileUrl="Mission3_Blue_Locations.xml"/>
    <RedTactic>Mission_3</RedTactic>
    <Trial trialNum="1">
        <Humint redCapability_Pc="1.0">
            <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
        </Humint>
        <OsintPresentation>
            <LocationIds>1-1 1-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </OsintPresentation>
        <ImintPresentation>
            <LocationIds>1-1 1-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </ImintPresentation>
        <AttackPropensityProbe_Pp id="Pp"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
            <Datum datumType="OSINT" locationId="1-1"/>
            <Datum datumType="IMINT" locationId="1-1"/>
            <Datum datumType="OSINT" locationId="1-2"/>
            <Datum datumType="IMINT" locationId="1-2"/>
            <Datum datumType="BlueBook"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
            <Probability locationId="1-2" locationIndex="1" redAction="Attack"/>
        </AttackPropensityProbe_Pp>
        <HumintPresentation>
            <LocationIds>1-1 1-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </HumintPresentation>
        <AttackProbabilityProbe_Ppc id="Ppc"
         normalizationConstraint="LessThanOrEqualTo"
         targetSum="100.0" name="P(Attack|HUMINT, IMINT, OSINT)"
         type="AttackProbabilityReport_Ppc">
            <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
```

```xml
                        locationId="1-1"/>
            <Datum datumType="HUMINT" locationId="1-1"/>
            <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
                locationId="1-2"/>
            <Datum datumType="HUMINT" locationId="1-2"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
            <Probability locationId="1-2" locationIndex="1" redAction="Attack"/>
        </AttackProbabilityProbe_Ppc>
        <SigintSelectionProbe numSigintSelections="1"
         name="SIGINT Selection" type="SigintSelection">
            <LocationIds>1-1 1-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </SigintSelectionProbe>
        <SigintPresentation/>
        <AttackProbabilityProbe_Ptpc id="Ptpc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
         type="AttackProbabilityReport_Ptpc">
            <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="1-1"/>
            <Datum datumType="SIGINT" locationId="1-1"/>
            <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="1-2"/>
            <Datum datumType="SIGINT" locationId="1-2"/>
            <Datum datumType="SIGINTReliability"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
            <Probability locationId="1-2" locationIndex="1" redAction="Attack"/>
        </AttackProbabilityProbe_Ptpc>
        <BlueActionSelection dataProvidedToParticipant="false"
         name="Blue Action Selection" type="BlueActionSelection">
            <BlueAction locationId="1-1" locationIndex="0"/>
            <BlueAction locationId="1-2" locationIndex="1"/>
        </BlueActionSelection>
        <RedActionSelection dataProvidedToParticipant="true"
         type="RedActionSelection">
            <RedAction action="Do_Not_Attack" locationId="1-2" locationIndex="1"/>
        </RedActionSelection>
        <ShowdownWinner locationId="1-1" locationIndex="0" winner="Red"/>
        <ShowdownWinner locationId="1-2" locationIndex="1" winner="Blue"/>
    </Trial>
    <Trial trialNum="2">
        <Humint redCapability_Pc="1.0">
            <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
        </Humint>
        <OsintPresentation>
            <LocationIds>2-1 2-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </OsintPresentation>
        <ImintPresentation>
            <LocationIds>2-1 2-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </ImintPresentation>
        <AttackPropensityProbe_Pp id="Pp"
```

```xml
            normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
            <Datum datumType="OSINT" locationId="2-1"/>
            <Datum datumType="IMINT" locationId="2-1"/>
            <Datum datumType="OSINT" locationId="2-2"/>
            <Datum datumType="IMINT" locationId="2-2"/>
            <Datum datumType="BlueBook"/>
            <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
            <Probability locationId="2-2" locationIndex="1" redAction="Attack"/>
        </AttackPropensityProbe_Pp>
        <HumintPresentation>
            <LocationIds>2-1 2-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </HumintPresentation>
        <AttackProbabilityProbe_Ppc id="Ppc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|HUMINT, IMINT, OSINT)" type="AttackProbabilityReport_Ppc">
            <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
                locationId="2-1"/>
            <Datum datumType="HUMINT" locationId="2-1"/>
            <Datum datumId="Pp" datumType="AttackProbabilityReport_Propensity"
                locationId="2-2"/>
            <Datum datumType="HUMINT" locationId="2-2"/>
            <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
            <Probability locationId="2-2" locationIndex="1" redAction="Attack"/>
        </AttackProbabilityProbe_Ppc>
        <SigintSelectionProbe numSigintSelections="1" name="SIGINT Selection"
         type="SigintSelection">
            <LocationIds>2-1 2-2</LocationIds>
            <LocationIndexes>0 1</LocationIndexes>
        </SigintSelectionProbe>
        <SigintPresentation/>
        <AttackProbabilityProbe_Ptpc id="Ptpc"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
         type="AttackProbabilityReport_Ptpc">
            <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="2-1"/>
            <Datum datumType="SIGINT" locationId="2-1"/>
            <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="2-2"/>
            <Datum datumType="SIGINT" locationId="2-2"/>
            <Datum datumType="SIGINTReliability"/>
            <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
            <Probability locationId="2-2" locationIndex="1" redAction="Attack"/>
        </AttackProbabilityProbe_Ptpc>
        <BlueActionSelection dataProvidedToParticipant="false"
         name="Blue Action Selection" type="BlueActionSelection">
            <BlueAction locationId="2-1" locationIndex="0"/>
            <BlueAction locationId="2-2" locationIndex="1"/>
        </BlueActionSelection>
        <RedActionSelection dataProvidedToParticipant="true"
         type="RedActionSelection">
```

```xml
                    <RedAction action="Do_Not_Attack" locationId="2-1" locationIndex="0"/>
                </RedActionSelection>
                <ShowdownWinner locationId="2-1" locationIndex="0" winner="Blue"/>
                <ShowdownWinner locationId="2-2" locationIndex="1" winner="Red"/>
            </Trial>
        </Mission>

        <!-- Mission 4 -->
        <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:type="ns2:Mission_4_5_6" maxNumBatchPlots="1" missionType="Mission_4"
            programPhaseId="2" id="Mission4" examId="Sample-Exam-DG" name="Mission 4">
            <AoiFile fileUrl="Mission4_Area_Of_Interest.xml"/>
            <BlueLocationsFile fileUrl="Mission4_Blue_Locations.xml"/>
            <Trial trialNum="1">
                <Humint redCapability_Pc="1.0">
                    <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
                </Humint>
                <AttackPropensityProbe_Pp id="Pp"
                 normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                 name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
                    <Datum datumType="OSINT" locationId="1-1"/>
                    <Datum datumType="IMINT" locationId="1-1"/>
                    <Datum datumType="BlueBook"/>
                    <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
                </AttackPropensityProbe_Pp>
                <BlueActionSelection dataProvidedToParticipant="false"
                 name="Blue Action Selection" type="BlueActionSelection">
                    <BlueAction locationId="1-1" locationIndex="0"/>
                </BlueActionSelection>
                <RedActionSelection dataProvidedToParticipant="true"
                 type="RedActionSelection">
                    <RedAction action="Do_Not_Attack" locationId="1-1" locationIndex="0"/>
                </RedActionSelection>
                <ShowdownWinner locationId="1-1" locationIndex="0" winner="Red"/>
                <RedTactic>Mission_4_Aggressive</RedTactic>
            </Trial>
            <Trial trialNum="2">
                <Humint redCapability_Pc="1.0">
                    <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
                </Humint>
                <RedTacticsProbe xsi:type="ns2:RedTacticProbabilityReportProbe"
                 targetSum="100.0" normalizationConstraint="EqualTo"
                 name="P(Red Style)" type="RedTacticsProbabilityReport">
                    <BatchPlotProbe blueLocationsPerTrial="1" optional="false"
                        type="BatchPlotProbe">
                        <PreviousTrials>1</PreviousTrials>
                    </BatchPlotProbe>
                    <Datum datumType="BatchPlots"/>
                    <Datum datumType="BlueBook"/>
                    <Probability redTactic="Mission_4_Passive"/>
                    <Probability redTactic="Mission_4_Aggressive"/>
                </RedTacticsProbe>
                <AttackPropensityProbe_Pp id="Pp"
                 normalizationConstraint="LessThanOrEqualTo"
                 targetSum="100.0" name="P(Attack|IMINT, OSINT)"
```

```xml
                    type="AttackProbabilityReport_Pp">
                        <Datum datumType="OSINT" locationId="2-1"/>
                        <Datum datumType="IMINT" locationId="2-1"/>
                        <Datum datumType="BlueBook"/>
                        <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
                </AttackPropensityProbe_Pp>
                <BlueActionSelection dataProvidedToParticipant="false"
                  name="Blue Action Selection" type="BlueActionSelection">
                        <BlueAction locationId="2-1" locationIndex="0"/>
                </BlueActionSelection>
                <RedActionSelection dataProvidedToParticipant="true"
                 type="RedActionSelection">
                        <RedAction action="Attack" locationId="2-1" locationIndex="0"/>
                </RedActionSelection>
                <ShowdownWinner locationId="2-1" locationIndex="0" winner="Blue"/>
                <RedTactic>Mission_4_Aggressive</RedTactic>
        </Trial>
</Mission>

<!-- Mission 5 -->
<Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:type="ns2:Mission_4_5_6" maxNumBatchPlots="1" missionType="Mission_5"
   programPhaseId="2" id="Mission5" examId="Sample-Exam-DG" name="Mission 5">
    <AoiFile fileUrl="Mission5_Area_Of_Interest.xml"/>
    <BlueLocationsFile fileUrl="Mission5_Blue_Locations.xml"/>
    <Trial trialNum="1">
        <Humint redCapability_Pc="1.0">
            <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
        </Humint>
        <AttackPropensityProbe_Pp id="Pp"
         normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
         name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp">
            <Datum datumType="OSINT" locationId="1-1"/>
            <Datum datumType="IMINT" locationId="1-1"/>
            <Datum datumType="BlueBook"/>
            <Probability locationId="1-1" locationIndex="0" redAction="Attack"/>
        </AttackPropensityProbe_Pp>
        <BlueActionSelection dataProvidedToParticipant="false"
         name="Blue Action Selection" type="BlueActionSelection">
            <BlueAction locationId="1-1" locationIndex="0"/>
        </BlueActionSelection>
        <RedActionSelection dataProvidedToParticipant="true"
         type="RedActionSelection">
            <RedAction action="Attack" locationId="1-1" locationIndex="0"/>
        </RedActionSelection>
        <ShowdownWinner locationId="1-1" locationIndex="0" winner="Red"/>
        <RedTactic>Mission_5_Psensitive</RedTactic>
    </Trial>
    <Trial trialNum="2">
        <Humint redCapability_Pc="0.4">
            <numTrialsSinceLastAttack>1</numTrialsSinceLastAttack>
        </Humint>
        <RedTacticsProbe xsi:type="ns2:RedTacticProbabilityReportProbe"
         targetSum="100.0" normalizationConstraint="EqualTo"
         name="P(Red Style)" type="RedTacticsProbabilityReport">
```

```xml
                <BatchPlotProbe blueLocationsPerTrial="1" optional="false"
                    type="BatchPlotProbe">
                    <PreviousTrials>1</PreviousTrials>
                </BatchPlotProbe>
                <Datum datumType="BatchPlots"/>
                <Datum datumType="BlueBook"/>
                <Probability redTactic="Mission_5_Psensitive"/>
                <Probability redTactic="Mission_5_Usensitive"/>
            </RedTacticsProbe>
            <AttackPropensityProbe_Pp id="Pp"
             normalizationConstraint="LessThanOrEqualTo"
             targetSum="100.0" name="P(Attack|IMINT, OSINT)"
             type="AttackProbabilityReport_Pp">
                <Datum datumType="OSINT" locationId="2-1"/>
                <Datum datumType="IMINT" locationId="2-1"/>
                <Datum datumType="BlueBook"/>
                <Probability locationId="2-1" locationIndex="0" redAction="Attack"/>
            </AttackPropensityProbe_Pp>
            <BlueActionSelection dataProvidedToParticipant="false"
             name="Blue Action Selection" type="BlueActionSelection">
                <BlueAction locationId="2-1" locationIndex="0"/>
            </BlueActionSelection>
            <RedActionSelection dataProvidedToParticipant="true"
             type="RedActionSelection">
                <RedAction action="Attack" locationId="2-1" locationIndex="0"/>
            </RedActionSelection>
            <ShowdownWinner locationId="2-1" locationIndex="0" winner="Red"/>
            <RedTactic>Mission_5_Psensitive</RedTactic>
        </Trial>
    </Mission>
</ns2:IcarusExam_Phase2>
```

4.2 Appendix B: Example Output File

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:IcarusExam_Phase2 xmlns:ns2="IcarusCPD_2"
    xmlns:ns3="IcarusCPD_Base" xmlns:ns4="IcarusCPD_05" xmlns:ns5="IcarusCPD_1"
    xmlns:ns6="IcarusUIStudy" endTime="2013-12-06T15:34:25.580-05:00"
    examTimeStamp="2013-12-06T11:17:33.684-05:00"
     id="Sample-Exam-DG" name="Sample Exam DG"
    programPhaseId="2" startTime="2013-12-06T15:29:14.459-05:00"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="IcarusCPD_Base IcarusBaseSchema.xsd
    IcarusCPD_1 IcarusCPD_1_Schema.xsd IcarusCPD_2 IcarusCPD_2_Schema.xsd">

    <!-- ICArUS Model Information -->
    <ResponseGenerator>
        <HumanSubject>false</HumanSubject>
        <ResponseGeneratorId>DEMO</ResponseGeneratorId>
        <SiteId>MITRE</SiteId>
    </ResponseGenerator>

    <!-- Mission 1 Response -->
    <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:type="ns2:Mission_1_2_3" missionType="Mission_1" programPhaseId="2"
        id="Mission1" examId="Sample-Exam-DG"
        startTime="2013-12-06T15:29:14.459-05:00"
        endTime="2013-12-06T15:30:06.960-05:00" name="Mission 1">
        <AoiFile fileUrl="Mission1_Area_Of_Interest.xml" />
        <BlueLocationsFile fileUrl="Mission1_Blue_Locations.xml" />
        <RedTactic>Mission_1</RedTactic>
        <Trial trialTime_ms="31202" trialNum="1">
            <Humint redCapability_Pc="1.0">
                <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
            </Humint>
            <OsintPresentation>
                <LocationIds>1-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
            </OsintPresentation>
            <ImintPresentation>
                <LocationIds>1-1</LocationIds>
                <LocationIndexes>0</LocationIndexes>
            </ImintPresentation>
            <AttackPropensityProbe_Pp id="Pp"
                normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                trialPartTime_ms="3847">
                <Datum datumType="OSINT" locationId="1-1" />
                <Datum datumType="IMINT" locationId="1-1" />
                <Datum datumType="BlueBook" />
                <AdjustmentSequence index="0" timeStamp="1386361754459" />
                <Probability locationId="1-1" locationIndex="0"
                    redAction="Attack" probability="73.0"
```

```xml
                                        time_ms="3847" />
                </AttackPropensityProbe_Pp>
                <HumintPresentation>
                        <LocationIds>1-1</LocationIds>
                        <LocationIndexes>0</LocationIndexes>
                </HumintPresentation>
                <AttackProbabilityProbe_Ppc id="Ppc"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|HUMINT, IMINT, OSINT)"
                        type="AttackProbabilityReport_Ppc"
                        trialPartTime_ms="8904">
                        <Datum datumId="Pp"
                                datumType="AttackProbabilityReport_Propensity"
                                locationId="1-1" />
                        <Datum datumType="HUMINT" locationId="1-1" />
                        <AdjustmentSequence index="0" timeStamp="1386361758306" />
                        <Probability locationId="1-1" locationIndex="0"
                                redAction="Attack" probability="40.0"
                                time_ms="8904" />
                </AttackProbabilityProbe_Ppc>
                <SigintPresentation>
                        <LocationIds>1-1</LocationIds>
                        <LocationIndexes>0</LocationIndexes>
                </SigintPresentation>
                <AttackProbabilityProbe_Pt id="Pt"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|SIGINT)" type="AttackProbabilityReport_Pt"
                        trialPartTime_ms="9978">
                        <Datum datumType="SIGINT" locationId="1-1" />
                        <Datum datumType="SIGINTReliability" />
                        <AdjustmentSequence index="0" timeStamp="1386361767210" />
                        <Probability locationId="1-1" locationIndex="0"
                                redAction="Attack" probability="33.0"
                                time_ms="9978" />
                </AttackProbabilityProbe_Pt>
                <AttackProbabilityProbe_Ptpc id="Ptpc"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
                        type="AttackProbabilityReport_Ptpc"
                        trialPartTime_ms="8473">
                        <Datum datumId="Ppc"
                                datumType="AttackProbabilityReport_Capability_Propensity"
                                locationId="1-1" />
                        <Datum datumId="Pt" datumType="AttackProbabilityReport_Activity"
                                locationId="1-1" />
                        <AdjustmentSequence index="0" timeStamp="1386361777188" />
                        <Probability locationId="1-1" locationIndex="0"
                                redAction="Attack" probability="71.0"
                                time_ms="8473" />
                </AttackProbabilityProbe_Ptpc>
                <BlueActionSelection dataProvidedToParticipant="true"
                        name="Blue Action Selection" type="BlueActionSelection">
                        <BlueAction action="Do_Not_Divert" locationId="1-1"
                                locationIndex="0" />
                </BlueActionSelection>
```

```xml
            <RedActionSelection dataProvidedToParticipant="true"
                    type="RedActionSelection">
                    <RedAction action="Attack" locationId="1-1" locationIndex="0" />
            </RedActionSelection>
            <ShowdownWinner locationId="1-1" locationIndex="0"
                    winner="Red" />
    </Trial>
    <Trial trialTime_ms="21299" trialNum="2">
            <Humint redCapability_Pc="0.4">
                    <numTrialsSinceLastAttack>1</numTrialsSinceLastAttack>
            </Humint>
            <OsintPresentation>
                    <LocationIds>2-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </OsintPresentation>
            <ImintPresentation>
                    <LocationIds>2-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </ImintPresentation>
            <AttackPropensityProbe_Pp id="Pp"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                    trialPartTime_ms="3562">
                    <Datum datumType="OSINT" locationId="2-1" />
                    <Datum datumType="IMINT" locationId="2-1" />
                    <Datum datumType="BlueBook" />
                    <AdjustmentSequence index="0" timeStamp="1386361785661" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="96.0"
                            time_ms="3562" />
            </AttackPropensityProbe_Pp>
            <HumintPresentation>
                    <LocationIds>2-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </HumintPresentation>
            <AttackProbabilityProbe_Ppc id="Ppc"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|HUMINT, IMINT, OSINT)"
                    type="AttackProbabilityReport_Ppc"
                    trialPartTime_ms="5262">
                    <Datum datumId="Pp"
                            datumType="AttackProbabilityReport_Propensity"
                            locationId="2-1" />
                    <Datum datumType="HUMINT" locationId="2-1" />
                    <AdjustmentSequence index="0" timeStamp="1386361789223" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="55.0"
                            time_ms="5262" />
            </AttackProbabilityProbe_Ppc>
            <SigintPresentation>
                    <LocationIds>2-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </SigintPresentation>
            <AttackProbabilityProbe_Pt id="Pt"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
```

```xml
                          name="P(Attack|SIGINT)" type="AttackProbabilityReport_Pt"
                          trialPartTime_ms="7376">
                          <Datum datumType="SIGINT" locationId="2-1" />
                          <Datum datumType="SIGINTReliability" />
                          <AdjustmentSequence index="0" timeStamp="1386361794485" />
                          <Probability locationId="2-1" locationIndex="0"
                                  redAction="Attack" probability="94.0 "
                                  time_ms="7376" />
                  </AttackProbabilityProbe_Pt>
                  <AttackProbabilityProbe_Ptpc id="Ptpc"
                          normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                          name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
                          type="AttackProbabilityReport_Ptpc"
                          trialPartTime_ms="5099">
                          <Datum datumId="Ppc"
                                  datumType="AttackProbabilityReport_Capability_Propensity"
                                  locationId="2-1" />
                          <Datum datumId="Pt" datumType="AttackProbabilityReport_Activity"
                                  locationId="2-1" />
                          <AdjustmentSequence index="0" timeStamp="1386361801861" />
                          <Probability locationId="2-1" locationIndex="0"
                                  redAction="Attack" probability="91.0"
                                  time_ms="5099" />
                  </AttackProbabilityProbe_Ptpc>
                  <BlueActionSelection dataProvidedToParticipant="true"
                          name="Blue Action Selection" type="BlueActionSelection">
                          <BlueAction action="Do_Not_Divert" locationId="2-1"
                                  locationIndex="0" />
                  </BlueActionSelection>
                  <RedActionSelection dataProvidedToParticipant="true"
                          type="RedActionSelection">
                          <RedAction action="Do_Not_Attack" locationId="2-1"
                                  locationIndex="0" />
                  </RedActionSelection>
                  <ShowdownWinner locationId="2-1" locationIndex="0"
                          winner="Red" />
          </Trial>
  </Mission>

  <!-- Mission 2 Response -->
  <Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:type="ns2:Mission_1_2_3" missionType="Mission_2" programPhaseId="2"
          id="Mission2" examId="Sample-Exam-DG"
          startTime="2013-12-06T15:30:06.960-05:00"
          endTime="2013-12-06T15:31:07.203-05:00" name="Mission 2">
          <AoiFile fileUrl="Mission2_Area_Of_Interest.xml" />
          <BlueLocationsFile fileUrl="Mission2_Blue_Locations.xml" />
          <RedTactic>Mission_2_Aggressive</RedTactic>
          <Trial trialTime_ms="19763" trialNum="1">
                  <Humint redCapability_Pc="1.0">
                          <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
                  </Humint>
                  <OsintPresentation>
                          <LocationIds>1-1</LocationIds>
                          <LocationIndexes>0</LocationIndexes>
```

```xml
            </OsintPresentation>
            <ImintPresentation>
                    <LocationIds>1-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </ImintPresentation>
            <AttackPropensityProbe_Pp id="Pp"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                    trialPartTime_ms="3298">
                    <Datum datumType="OSINT" locationId="1-1" />
                    <Datum datumType="IMINT" locationId="1-1" />
                    <Datum datumType="BlueBook" />
                    <AdjustmentSequence index="0" timeStamp="1386361806960" />
                    <Probability locationId="1-1" locationIndex="0"
                            redAction="Attack" probability="29.0"
                            time_ms="3298" />
            </AttackPropensityProbe_Pp>
            <HumintPresentation>
                    <LocationIds>1-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </HumintPresentation>
            <AttackProbabilityProbe_Ppc id="Ppc"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|HUMINT, IMINT, OSINT)"
                    type="AttackProbabilityReport_Ppc"
                    trialPartTime_ms="5302">
                    <Datum datumId="Pp"
                            datumType="AttackProbabilityReport_Propensity"
                            locationId="1-1" />
                    <Datum datumType="HUMINT" locationId="1-1" />
                    <AdjustmentSequence index="0" timeStamp="1386361810258" />
                    <Probability locationId="1-1" locationIndex="0"
                            redAction="Attack" probability="86.0"
                            time_ms="5302" />
            </AttackProbabilityProbe_Ppc>
            <SigintPresentation>
                    <LocationIds>1-1</LocationIds>
                    <LocationIndexes>0</LocationIndexes>
            </SigintPresentation>
            <AttackProbabilityProbe_Ptpc id="Ptpc"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
                    type="AttackProbabilityReport_Ptpc"
                    trialPartTime_ms="6800">
                    <Datum datumId="Ppc"
                            datumType="AttackProbabilityReport_Capability_Propensity"
                            locationId="1-1" />
                    <Datum datumType="SIGINT" locationId="1-1" />
                    <Datum datumType="SIGINTReliability" />
                    <AdjustmentSequence index="0" timeStamp="1386361815560" />
                    <Probability locationId="1-1" locationIndex="0"
                            redAction="Attack" probability="77.0"
                            time_ms="6800" />
            </AttackProbabilityProbe_Ptpc>
            <BlueActionSelection dataProvidedToParticipant="false"
```

```xml
                        name="Blue Action Selection" type="BlueActionSelection"
                        trialPartTime_ms="4363">
                        <BlueAction action="Divert" locationId="1-1"
                                locationIndex="0" />
                </BlueActionSelection>
                <RedActionSelection dataProvidedToParticipant="true"
                        type="RedActionSelection">
                        <RedAction action="Attack" locationId="1-1" locationIndex="0" />
                </RedActionSelection>
                <ShowdownWinner locationId="1-1" locationIndex="0"
                        winner="Blue" />
        </Trial>
        <Trial trialTime_ms="40480" trialNum="2">
                <Humint redCapability_Pc="0.4">
                        <numTrialsSinceLastAttack>1</numTrialsSinceLastAttack>
                </Humint>
                <OsintPresentation>
                        <LocationIds>2-1</LocationIds>
                        <LocationIndexes>0</LocationIndexes>
                </OsintPresentation>
                <ImintPresentation>
                        <LocationIds>2-1</LocationIds>
                        <LocationIndexes>0</LocationIndexes>
                </ImintPresentation>
                <MostLikelyRedTacticProbe name="Red Style Selection"
                        type="MostLikelyRedTacticSelection" trialPartTime_ms="12689">
                        <RedTactics>Mission_2_Passive Mission_2_Aggressive</RedTactics>
                        <MostLikelyRedTactic>Mission_2_Aggressive</MostLikelyRedTactic>
                </MostLikelyRedTacticProbe>
                <AttackPropensityProbe_Pp id="Pp"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                        trialPartTime_ms="4834">
                        <Datum datumType="OSINT" locationId="2-1" />
                        <Datum datumType="IMINT" locationId="2-1" />
                        <Datum datumType="BlueBook" />
                        <AdjustmentSequence index="0" timeStamp="1386361839412" />
                        <Probability locationId="2-1" locationIndex="0"
                                redAction="Attack" probability="62.0"
                                time_ms="4834" />
                </AttackPropensityProbe_Pp>
                <HumintPresentation>
                        <LocationIds>2-1</LocationIds>
                        <LocationIndexes>0</LocationIndexes>
                </HumintPresentation>
                <AttackProbabilityProbe_Ppc id="Ppc"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|HUMINT, IMINT, OSINT)"
                        type="AttackProbabilityReport_Ppc"
                        trialPartTime_ms="7477">
                        <Datum datumId="Pp"
                                datumType="AttackProbabilityReport_Propensity"
                                locationId="2-1" />
                        <Datum datumType="HUMINT" locationId="2-1" />
                        <AdjustmentSequence index="0" timeStamp="1386361844246" />
```

```xml
                        <Probability locationId="2-1" locationIndex="0"
                                redAction="Attack" probability="69.49479796024919"
                                time_ms="7477" />
                </AttackProbabilityProbe_Ppc>
                <SigintPresentation>
                        <LocationIds>2-1</LocationIds>
                        <LocationIndexes>0</LocationIndexes>
                </SigintPresentation>
                <AttackProbabilityProbe_Ptpc id="Ptpc"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
                        type="AttackProbabilityReport_Ptpc"
                        trialPartTime_ms="2592">
                        <Datum datumId="Ppc"
                                datumType="AttackProbabilityReport_Capability_Propensity"
                                locationId="2-1" />
                        <Datum datumType="SIGINT" locationId="2-1" />
                        <Datum datumType="SIGINTReliability" />
                        <AdjustmentSequence index="0" timeStamp="1386361851723" />
                        <Probability locationId="2-1" locationIndex="0"
                                redAction="Attack" probability="1.0"
                                time_ms="2592" />
                </AttackProbabilityProbe_Ptpc>
                <BlueActionSelection dataProvidedToParticipant="false"
                        name="Blue Action Selection" type="BlueActionSelection"
                        trialPartTime_ms="12888">
                        <BlueAction action="Do_Not_Divert" locationId="2-1"
                                locationIndex="0" />
                </BlueActionSelection>
                <RedActionSelection dataProvidedToParticipant="true"
                        type="RedActionSelection">
                        <RedAction action="Attack" locationId="2-1" locationIndex="0" />
                </RedActionSelection>
                <ShowdownWinner locationId="2-1" locationIndex="0"
                        winner="Red" />
        </Trial>
</Mission>

<!-- Mission 3 Response -->
<Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:type="ns2:Mission_1_2_3" missionType="Mission_3" programPhaseId="2"
        id="Mission3" examId="Sample-Exam-DG"
        startTime="2013-12-06T15:31:07.203-05:00"
        endTime="2013-12-06T15:33:02.368-05:00" name="Mission 3">
        <AoiFile fileUrl="Mission3_Area_Of_Interest.xml" />
        <BlueLocationsFile fileUrl="Mission3_Blue_Locations.xml" />
        <RedTactic>Mission_3</RedTactic>
        <Trial trialTime_ms="58551" trialNum="1">
                <Humint redCapability_Pc="1.0">
                        <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
                </Humint>
                <OsintPresentation>
                        <LocationIds>1-1 1-2</LocationIds>
                        <LocationIndexes>0 1</LocationIndexes>
                </OsintPresentation>
```

```xml
<ImintPresentation>
        <LocationIds>1-1 1-2</LocationIds>
        <LocationIndexes>0 1</LocationIndexes>
</ImintPresentation>
<AttackPropensityProbe_Pp id="Pp"
        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
        name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
        trialPartTime_ms="17731">
        <Datum datumType="OSINT" locationId="1-1" />
        <Datum datumType="IMINT" locationId="1-1" />
        <Datum datumType="OSINT" locationId="1-2" />
        <Datum datumType="IMINT" locationId="1-2" />
        <Datum datumType="BlueBook" />
        <AdjustmentSequence index="0" timeStamp="1386361867203" />
        <AdjustmentSequence index="1" timeStamp="1386361876879" />
        <Probability locationId="1-1" locationIndex="0"
                redAction="Attack" probability="74.0"
                time_ms="9676" />
        <Probability locationId="1-2" locationIndex="1"
                redAction="Attack" probability="14.0"
                time_ms="8055" />
</AttackPropensityProbe_Pp>
<HumintPresentation>
        <LocationIds>1-1 1-2</LocationIds>
        <LocationIndexes>0 1</LocationIndexes>
</HumintPresentation>
<AttackProbabilityProbe_Ppc id="Ppc"
        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
        name="P(Attack|HUMINT, IMINT, OSINT)"
        type="AttackProbabilityReport_Ppc"
        trialPartTime_ms="11388">
        <Datum datumId="Pp"
                datumType="AttackProbabilityReport_Propensity"
                locationId="1-1" />
        <Datum datumType="HUMINT" locationId="1-1" />
        <Datum datumId="Pp"
                datumType="AttackProbabilityReport_Propensity"
                locationId="1-2" />
        <Datum datumType="HUMINT" locationId="1-2" />
        <AdjustmentSequence index="0" timeStamp="1386361884934" />
        <AdjustmentSequence index="1" timeStamp="1386361887438" />
        <Probability locationId="1-1" locationIndex="0"
                redAction="Attack" probability="48.0"
                time_ms="2504" />
        <Probability locationId="1-2" locationIndex="1"
                redAction="Attack" probability="52.0"
                time_ms="8884" />
</AttackProbabilityProbe_Ppc>
<SigintSelectionProbe numSigintSelections="1"
        name="SIGINT Selection" type="SigintSelection"
        trialPartTime_ms="8151">
        <LocationIds>1-1 1-2</LocationIds>
        <LocationIndexes>0 1</LocationIndexes>
        <SelectedLocationIds>1-2</SelectedLocationIds>
</SigintSelectionProbe>
```

```xml
<SigintPresentation />
<AttackProbabilityProbe_Ptpc id="Ptpc"
        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
        name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
        type="AttackProbabilityReport_Ptpc"
        trialPartTime_ms="12422">
        <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="1-1" />
        <Datum datumType="SIGINT" locationId="1-1" />
        <Datum datumId="Ppc"
                datumType="AttackProbabilityReport_Capability_Propensity"
                locationId="1-2" />
        <Datum datumType="SIGINT" locationId="1-2" />
        <Datum datumType="SIGINTReliability" />
        <AdjustmentSequence index="0" timeStamp="1386361904473" />
        <AdjustmentSequence index="1" timeStamp="1386361912381" />
        <Probability locationId="1-1" locationIndex="0"
                redAction="Attack" probability="18.0"
                time_ms="7908" />
        <Probability locationId="1-2" locationIndex="1"
                redAction="Attack" probability="1.0"
                time_ms="4514" />
</AttackProbabilityProbe_Ptpc>
<BlueActionSelection dataProvidedToParticipant="false"
        name="Blue Action Selection" type="BlueActionSelection"
        trialPartTime_ms="8859">
        <BlueAction action="Divert" locationId="1-1"
                locationIndex="0" />
        <BlueAction action="Divert" locationId="1-2"
                locationIndex="1" />
</BlueActionSelection>
<RedActionSelection dataProvidedToParticipant="true"
        type="RedActionSelection">
        <RedAction action="Do_Not_Attack" locationId="1-2"
                locationIndex="1" />
</RedActionSelection>
<ShowdownWinner locationId="1-1" locationIndex="0"
        winner="Red" />
<ShowdownWinner locationId="1-2" locationIndex="1"
        winner="Blue" />
</Trial>
<Trial trialTime_ms="56614" trialNum="2">
        <Humint redCapability_Pc="1.0">
                <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
        </Humint>
        <OsintPresentation>
                <LocationIds>2-1 2-2</LocationIds>
                <LocationIndexes>0 1</LocationIndexes>
        </OsintPresentation>
        <ImintPresentation>
                <LocationIds>2-1 2-2</LocationIds>
                <LocationIndexes>0 1</LocationIndexes>
        </ImintPresentation>
        <AttackPropensityProbe_Pp id="Pp"
```

```xml
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                    trialPartTime_ms="13279">
                    <Datum datumType="OSINT" locationId="2-1" />
                    <Datum datumType="IMINT" locationId="2-1" />
                    <Datum datumType="OSINT" locationId="2-2" />
                    <Datum datumType="IMINT" locationId="2-2" />
                    <Datum datumType="BlueBook" />
                    <AdjustmentSequence index="0" timeStamp="1386361925754" />
                    <AdjustmentSequence index="1" timeStamp="1386361933841" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="12.0"
                            time_ms="8087" />
                    <Probability locationId="2-2" locationIndex="1"
                            redAction="Attack" probability="13.0"
                            time_ms="5192" />
            </AttackPropensityProbe_Pp>
            <HumintPresentation>
                    <LocationIds>2-1 2-2</LocationIds>
                    <LocationIndexes>0 1</LocationIndexes>
            </HumintPresentation>
            <AttackProbabilityProbe_Ppc id="Ppc"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|HUMINT, IMINT, OSINT)"
                    type="AttackProbabilityReport_Ppc"
                    trialPartTime_ms="11803">
                    <Datum datumId="Pp"
                            datumType="AttackProbabilityReport_Propensity"
                            locationId="2-1" />
                    <Datum datumType="HUMINT" locationId="2-1" />
                    <Datum datumId="Pp"
                            datumType="AttackProbabilityReport_Propensity"
                            locationId="2-2" />
                    <Datum datumType="HUMINT" locationId="2-2" />
                    <AdjustmentSequence index="0" timeStamp="1386361939033" />
                    <AdjustmentSequence index="1" timeStamp="1386361946595" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="68.0 "
                            time_ms="7562" />
                    <Probability locationId="2-2" locationIndex="1"
                            redAction="Attack" probability="32.0"
                            time_ms="4241" />
            </AttackProbabilityProbe_Ppc>
            <SigintSelectionProbe numSigintSelections="1"
                    name="SIGINT Selection" type="SigintSelection"
                    trialPartTime_ms="5485">
                    <LocationIds>2-1 2-2</LocationIds>
                    <LocationIndexes>0 1</LocationIndexes>
                    <SelectedLocationIds>2-2</SelectedLocationIds>
            </SigintSelectionProbe>
            <SigintPresentation />
            <AttackProbabilityProbe_Ptpc id="Ptpc"
                    normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                    name="P(Attack|SIGINT, HUMINT, IMINT, OSINT)"
                    type="AttackProbabilityReport_Ptpc"
```

```xml
                            trialPartTime_ms="11427">
                    <Datum datumId="Ppc"
                            datumType="AttackProbabilityReport_Capability_Propensity"
                            locationId="2-1" />
                    <Datum datumType="SIGINT" locationId="2-1" />
                    <Datum datumId="Ppc"
                            datumType="AttackProbabilityReport_Capability_Propensity"
                            locationId="2-2" />
                    <Datum datumType="SIGINT" locationId="2-2" />
                    <Datum datumType="SIGINTReliability" />
                    <AdjustmentSequence index="0" timeStamp="1386361956321" />
                    <AdjustmentSequence index="1" timeStamp="1386361959131" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="39.0"
                            time_ms="2810" />
                    <Probability locationId="2-2" locationIndex="1"
                            redAction="Attack" probability="27.0"
                            time_ms="8617" />
            </AttackProbabilityProbe_Ptpc>
            <BlueActionSelection dataProvidedToParticipant="false"
                    name="Blue Action Selection" type="BlueActionSelection"
                    trialPartTime_ms="14620">
                    <BlueAction action="Divert" locationId="2-1"
                            locationIndex="0" />
                    <BlueAction action="Divert" locationId="2-2"
                            locationIndex="1" />
            </BlueActionSelection>
            <RedActionSelection dataProvidedToParticipant="true"
                    type="RedActionSelection">
                    <RedAction action="Do_Not_Attack" locationId="2-1"
                            locationIndex="0" />
            </RedActionSelection>
            <ShowdownWinner locationId="2-1" locationIndex="0"
                    winner="Blue" />
            <ShowdownWinner locationId="2-2" locationIndex="1"
                    winner="Red" />
        </Trial>
</Mission>

<!-- Mission 4 Response -->
<Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:type="ns2:Mission_4_5_6" maxNumBatchPlots="1" missionType="Mission_4"
        programPhaseId="2" id="Mission4" examId="Sample-Exam-DG"
        startTime="2013-12-06T15:33:02.368-05:00"
        endTime="2013-12-06T15:33:53.893-05:00"
        name="Mission 4">
        <CountCondition>true</CountCondition>
        <ShowInstructionsPage>true</ShowInstructionsPage>
        <ShowScore>false</ShowScore>
        <ApplicationVersion>2.2</ApplicationVersion>
        <AoiFile fileUrl="Mission4_Area_Of_Interest.xml" />
        <BlueLocationsFile fileUrl="Mission4_Blue_Locations.xml" />
        <Trial trialTime_ms="12537" trialNum="1">
                <Humint redCapability_Pc="1.0">
                        <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
```

```xml
            </Humint>
            <AttackPropensityProbe_Pp id="Pp"
                normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                trialPartTime_ms="3101">
                <Datum datumType="OSINT" locationId="1-1" />
                <Datum datumType="IMINT" locationId="1-1" />
                <Datum datumType="BlueBook" />
                <AdjustmentSequence index="0" timeStamp="1386361982368" />
                <Probability locationId="1-1" locationIndex="0"
                    redAction="Attack" probability="65.0"
                    time_ms="3101" />
            </AttackPropensityProbe_Pp>
            <BlueActionSelection dataProvidedToParticipant="false"
                name="Blue Action Selection" type="BlueActionSelection"
                trialPartTime_ms="9436">
                <BlueAction action="Do_Not_Divert" locationId="1-1"
                    locationIndex="0" />
            </BlueActionSelection>
            <RedActionSelection dataProvidedToParticipant="true"
                type="RedActionSelection">
                <RedAction action="Do_Not_Attack" locationId="1-1"
                    locationIndex="0" />
            </RedActionSelection>
            <ShowdownWinner locationId="1-1" locationIndex="0"
                winner="Red" />
            <RedTactic>Mission_4_Aggressive</RedTactic>
    </Trial>
    <Trial trialTime_ms="38988" trialNum="2">
            <Humint redCapability_Pc="1.0">
                <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
            </Humint>
            <RedTacticsProbe xsi:type="ns2:RedTacticProbabilityReportProbe"
                targetSum="100.0" normalizationConstraint="EqualTo"
                 name="P(Red Style)"
                type="RedTacticsProbabilityReport" trialPartTime_ms="17118">
                <BatchPlotProbe blueLocationsPerTrial="1" optional="false"
                    numPreviousTrialsSelected="1" type="BatchPlotProbe">
                    <BlueLocationsClicked>1-1</BlueLocationsClicked>
                    <ButtonPressSequence>Backward</ButtonPressSequence>
                    <PreviousTrials>1</PreviousTrials>
                </BatchPlotProbe>
                <Datum datumType="BatchPlots" />
                <Datum datumType="BlueBook" />
                <AdjustmentSequence index="0" timeStamp="1386361994905" />
                <AdjustmentSequence index="1" timeStamp="1386362003399" />
                <Probability redTactic="Mission_4_Passive"
                    probability="45.0" time_ms="8494" />
                <Probability redTactic="Mission_4_Aggressive"
                    probability="55.0" time_ms="8624" />
            </RedTacticsProbe>
            <AttackPropensityProbe_Pp id="Pp"
                normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                trialPartTime_ms="8903">
```

```xml
                    <Datum datumType="OSINT" locationId="2-1" />
                    <Datum datumType="IMINT" locationId="2-1" />
                    <Datum datumType="BlueBook" />
                    <AdjustmentSequence index="0" timeStamp="1386362012023" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="44.32124503172691"
                            time_ms="8903" />
            </AttackPropensityProbe_Pp>
            <BlueActionSelection dataProvidedToParticipant="false"
                    name="Blue Action Selection" type="BlueActionSelection"
                    trialPartTime_ms="12967">
                    <BlueAction action="Divert" locationId="2-1"
                            locationIndex="0" />
            </BlueActionSelection>
            <RedActionSelection dataProvidedToParticipant="true"
                    type="RedActionSelection">
                    <RedAction action="Attack" locationId="2-1" locationIndex="0" />
            </RedActionSelection>
            <ShowdownWinner locationId="2-1" locationIndex="0"
                    winner="Blue" />
            <RedTactic>Mission_4_Aggressive</RedTactic>
        </Trial>
</Mission>

<!-- Mission 5 -->
<Mission xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:type="ns2:Mission_4_5_6" maxNumBatchPlots="1" missionType="Mission_5"
        programPhaseId="2" id="Mission5" examId="Sample-Exam-DG"
        startTime="2013-12-06T15:33:53.893-05:00"
        endTime="2013-12-06T15:34:25.580-05:00"
        name="Mission 5">
        <AoiFile fileUrl="Mission5_Area_Of_Interest.xml" />
        <BlueLocationsFile fileUrl="Mission5_Blue_Locations.xml" />
        <Trial trialTime_ms="12199" trialNum="1">
                <Humint redCapability_Pc="1.0">
                        <numTrialsSinceLastAttack>0</numTrialsSinceLastAttack>
                </Humint>
                <AttackPropensityProbe_Pp id="Pp"
                        normalizationConstraint="LessThanOrEqualTo" targetSum="100.0"
                        name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                        trialPartTime_ms="3833">
                        <Datum datumType="OSINT" locationId="1-1" />
                        <Datum datumType="IMINT" locationId="1-1" />
                        <Datum datumType="BlueBook" />
                        <AdjustmentSequence index="0" timeStamp="1386362033893" />
                        <Probability locationId="1-1" locationIndex="0"
                                redAction="Attack" probability="64.0"
                                time_ms="3833" />
                </AttackPropensityProbe_Pp>
                <BlueActionSelection dataProvidedToParticipant="false"
                        name="Blue Action Selection" type="BlueActionSelection"
                        trialPartTime_ms="8366">
                        <BlueAction action="Do_Not_Divert" locationId="1-1"
                                locationIndex="0" />
                </BlueActionSelection>
```

```xml
            <RedActionSelection dataProvidedToParticipant="true"
                    type="RedActionSelection">
                    <RedAction action="Attack" locationId="1-1" locationIndex="0" />
            </RedActionSelection>
            <ShowdownWinner locationId="1-1" locationIndex="0"
                    winner="Red" />
            <RedTactic>Mission_5_Psensitive</RedTactic>
    </Trial>
    <Trial trialTime_ms="19488" trialNum="2">
            <Humint redCapability_Pc="0.4">
                    <numTrialsSinceLastAttack>1</numTrialsSinceLastAttack>
            </Humint>
            <RedTacticsProbe xsi:type="ns2:RedTacticProbabilityReportProbe"
                    targetSum="100.0" normalizationConstraint="EqualTo"
                     name="P(Red Style)"
                    type="RedTacticsProbabilityReport" trialPartTime_ms="5693">
                    <BatchPlotProbe blueLocationsPerTrial="1"
                            numPreviousTrialsSelected="1" optional="false"
                             type="BatchPlotProbe">
                            <BlueLocationsClicked>1-1</BlueLocationsClicked>
                            <ButtonPressSequence>Backward</ButtonPressSequence>
                            <PreviousTrials>1</PreviousTrials>
                    </BatchPlotProbe>
                    <Datum datumType="BatchPlots" />
                    <Datum datumType="BlueBook" />
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                    <AdjustmentSequence index="1" timeStamp="1386362049295" />
                    <Probability redTactic="Mission_5_Psensitive"
                            probability="69.0" time_ms="3203" />
                    <Probability redTactic="Mission_5_Usensitive"
                            probability="31.0" time_ms="2490" />
            </RedTacticsProbe>
            <AttackPropensityProbe_Pp id="Pp"
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                    name="P(Attack|IMINT, OSINT)" type="AttackProbabilityReport_Pp"
                    trialPartTime_ms="5096">
                    <Datum datumType="OSINT" locationId="2-1" />
                    <Datum datumType="IMINT" locationId="2-1" />
                    <Datum datumType="BlueBook" />
                    <AdjustmentSequence index="0" timeStamp="1386362051785" />
                    <Probability locationId="2-1" locationIndex="0"
                            redAction="Attack" probability="55.0"
                            time_ms="5096" />
            </AttackPropensityProbe_Pp>
            <BlueActionSelection dataProvidedToParticipant="false"
                    name="Blue Action Selection" type="BlueActionSelection"
                    trialPartTime_ms="8699">
                    <BlueAction action="Do_Not_Divert" locationId="2-1"
                            locationIndex="0" />
            </BlueActionSelection>
            <RedActionSelection dataProvidedToParticipant="true"
                    type="RedActionSelection">
                    <RedAction action="Attack" locationId="2-1" locationIndex="0" />
            </RedActionSelection>
            <ShowdownWinner locationId="2-1" locationIndex="0"
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```xml
                    winner="Red" />
                <RedTactic>Mission_5_Psensitive</RedTactic>
            </Trial>
        </Mission>
</ns2:IcarusExam_Phase2>
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