Introduction to RIEDP
Reuse and Interoperation of Environmental Data & Processes

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RIEDP Program Development Group Chair
« The Elephant observed by the Blinds »

« If you are holding a hammer, everything looks like a nail! »
Sogitec at a glance

Simulators for Training
- Mirage Family (F1, -5, D, -9, H, …)
- Rafale
- Grob 120
- Helico (Dauphin, Cougar, NH90)

Users
- France
  - FAF, Army Light Aviation, Navy
- Foreign users
  - NATO
  - Middle East
  - Taiwan
  - India
  - …
Environment Requirements for an Aircraft Simulator

Diversity of Terrain natures

Diversity of Target applications
NH90 Terrain Requirements

- Large Database
- ½ Million km²
- Fidelity
Towards more Fidelity in the Synthetic Environment

1- More fidelity is required
2- Not only on Imagery

Elevation Grid: 25 m
Elevation Grid: 1 m
Building the Simulator Database

1. Database Requirements
2. Source Data
3. Database Creation
   - Find the data
   - Solve IPR
4. € / $
5. Target Databases
   - Visual DB
   - Radar DB
   - IR DB
   - Other Sensors
   - CGF DB
   - Maps
   - Others
6. Operate!
Main issues for Distributed Simulation
Reuse – Correlation – Interoperability ....

- Duplication of efforts
- Duplication of Cost
- Time to market

Requirements

Consistency ?
Schedule ?

Sim A - Provider 1
Sim B - Provider 2
Sim C – Provider 3

Source Datasets
- Find the data
- Solve IPR

Database Creation
- Clean
- Enhance
- Format

Target Databases
- Visual DB
- Radar DB
- IR DB
- Other Sensors
- CGP DB
- Noise
- Others

Duplication of efforts
Duplication of Cost
Time to market
Transformation Process – Two main phases

**Phase 1:** Data Cleaning & Enhancement
**Phase 2:** Target DBs Generation

**Source Data**
**Synthetic Environment Intermediate Data**
**M&S World**

**GIS World**

**Target Data Bases**
- Visual DB
- Radar DB
- IR DB
- Other Sensors
- CGF DB
- Maps
- Others

**Manual Work:** 80%
**Computation Time:** 20%
**Standardize here?**
The process may be made more efficient

- If Source data is consistent
  - Within each and between the layers (depends on Data providers)
- If previous creation efforts may be reused
  - At Source Data Level (Linked to GIS World)
    - Discovery + Quality of Data
  - At Intermediate Level
    - Imposes Common Representation and Formats at this level

• Metadata
• Data Quality

Hardly Capitalisable (Unless use of common models)
# Summary of International Standardization Efforts

<table>
<thead>
<tr>
<th>Nature</th>
<th>Standards</th>
<th>Initiatives</th>
<th>Other</th>
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<tbody>
<tr>
<td>Name</td>
<td>SIF</td>
<td>SEDRIS</td>
<td>NPSI</td>
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<tr>
<td>Origin</td>
<td>US DOD</td>
<td>US DOD</td>
<td>US Navy</td>
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<tr>
<td>Open Standard</td>
<td>Yes</td>
<td>Yes</td>
<td>limited</td>
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<tr>
<td>Approach</td>
<td>Format according to standard</td>
<td>Abstract Data Model + Format according to standard</td>
<td>Based on de-facto Standard</td>
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<tr>
<td>Availability of Commercial Support Tools</td>
<td>Obsolete</td>
<td>Tools developed in SEDRIS COI</td>
<td>Commercial Tools for Commercial &amp; Standards Formats</td>
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Scope of the SISO RIEDP Product Development Group

Standardization efforts needed in following areas:

- Data model, formats, attribution and “miscellaneous” (incl. metadata).

Divided along two axes leading to two products:

- **RIEDP Data Model Foundations** with two coupled parts:
  - The Reference Process Model (RPM)
    - High Level representation of the database creation process model
  - Reference Abstract Data Model (RADM)
    - High level concepts of a database i.e.
      - the principles of Tiles, Layers, Library, a set of common layers, an (optional) tiling scheme;

- **RIEDP Detailed Features description** at the lower level part of the RADM:
  - **Objects**: Identification of geo-specific object instances and classes (features, 3D objects, textures) within the Library, and the linkage between instances and classes;
  - **Dictionary**: choice of semantics and mapping with existing dictionaries;
  - **Attribution**: Identification of a common list of features, attributes, attribution rules.
Next to come

Product n°1

- New version of the RIEDP Data Model Foundations
  - RPM stabilized
  - New draft for RADM
  - Second Informal Review in progress

Product n°2

- Initiation of the RIEDP Detailed Features Description
- Fall ‘15 SIW
Latest Draft of the RIEDP Reference Process Model

Process Flow

Start

Define Requirements

Collect Source Data

Clean Source Data

Align Source Layers

Establish Baseline Data

Intensify Baseline Data

Specialize Data for Target Applications

Generate RT Target Databases

Acquire Application-Specific Requirements

Export

End
Please join the SISO Community

• SISO Members by attending the Workshops
• SISO Member by registering on the Web Site ($ 50)

Then share with the community

- PDG SISO Discussion - Register for Discussion:
  - Logon to SISO Discussions and select
    - SAC-PDG-RIEDP (Don’t forget to select SUBMIT !)

- PDG SISO Webpage - Complete Affiliation Form:
  - Standards Activities > Development Groups >
    - Reuse and Interoperation of Environmental Data and Processes (RIEDP) PDG

- PDG SISO Library File Folder – Access PDG Documents:
  - SISO Digital Library > Development Groups > RIEDP PDG
# Participants in the Product Development Effort

<table>
<thead>
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Thank you for your attention!

Any questions?