



**Simulation Interoperability  
Standards Organization**

*"Simulation Interoperability & Reuse through Standards"*

# Introduction to RIEDP

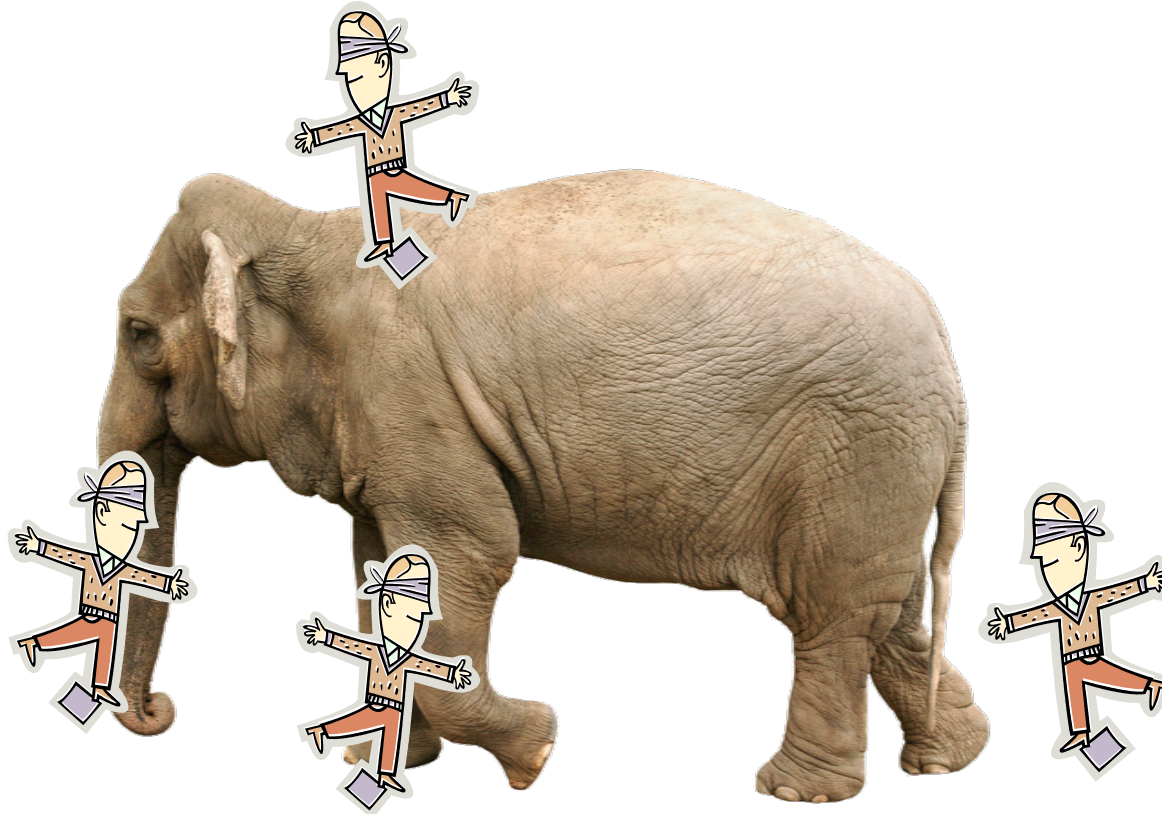
Reuse and Interoperation

of Environmental Data & Processes

Jean-Louis GOUGEAT, Sogitec  
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

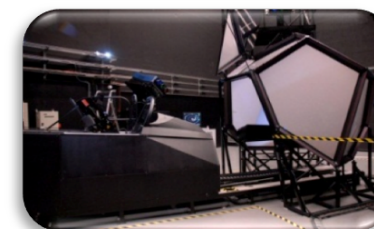
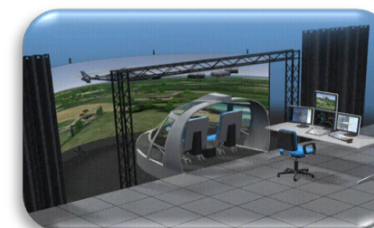
### Simulators for Training

- 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
  - ▶ ...





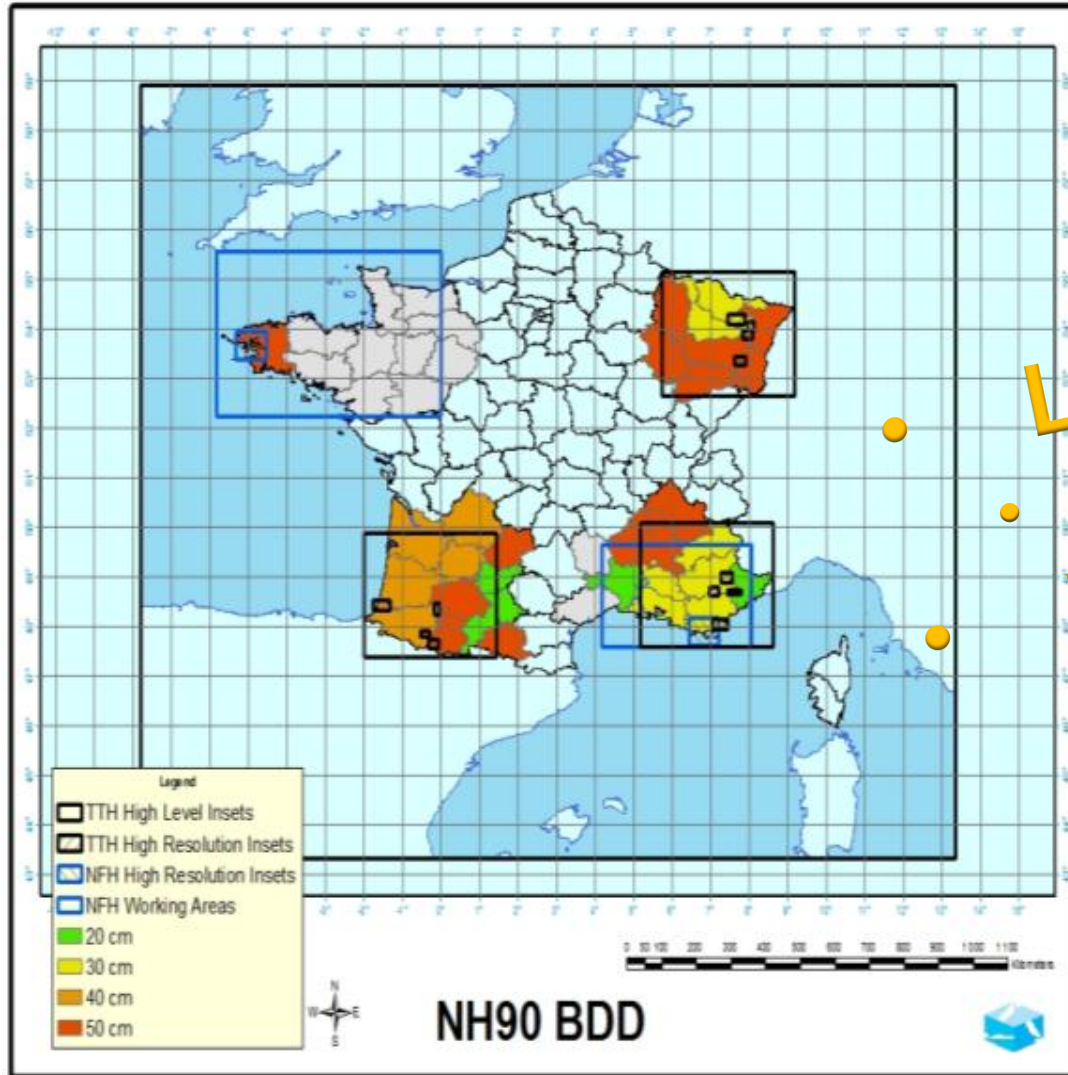
# Environment Requirements for an Aircraft Simulator







# NH90 Terrain Requirements



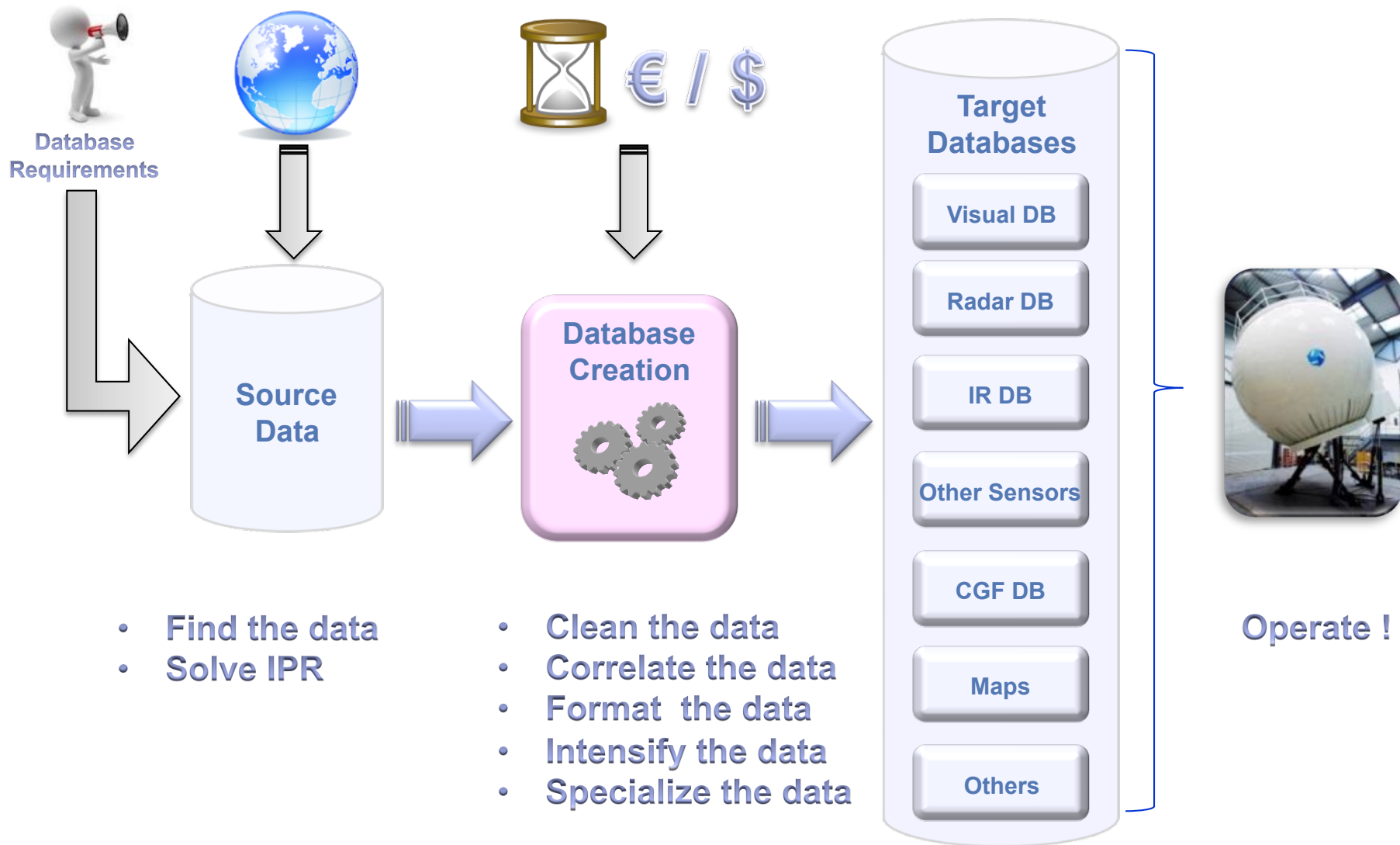
Large Database  
1/2 Million km<sup>2</sup>  
Fidelity

## Towards more Fidelity in the Synthetic Environment





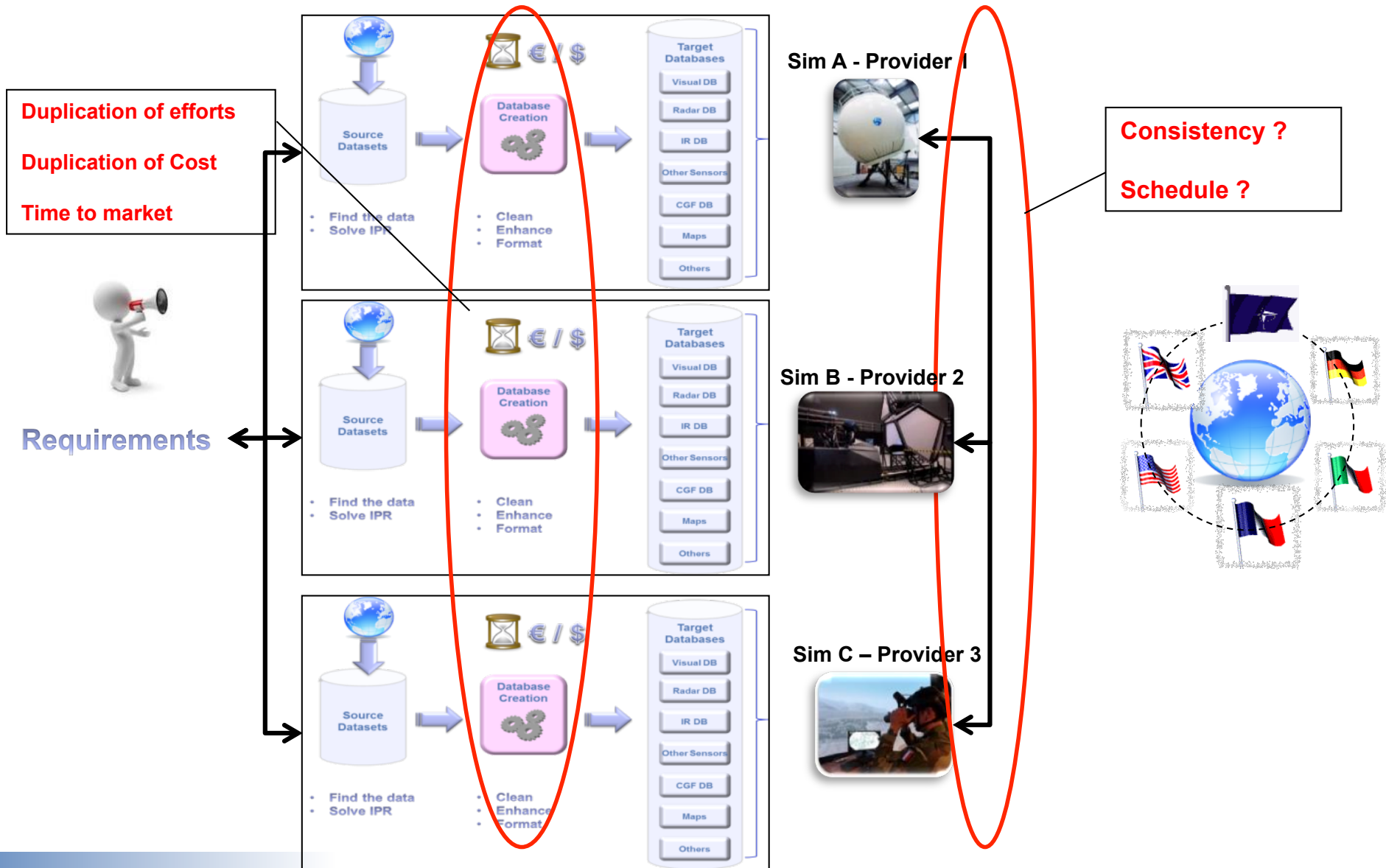
# Building the Simulator Database



- Find the data
- Solve IPR

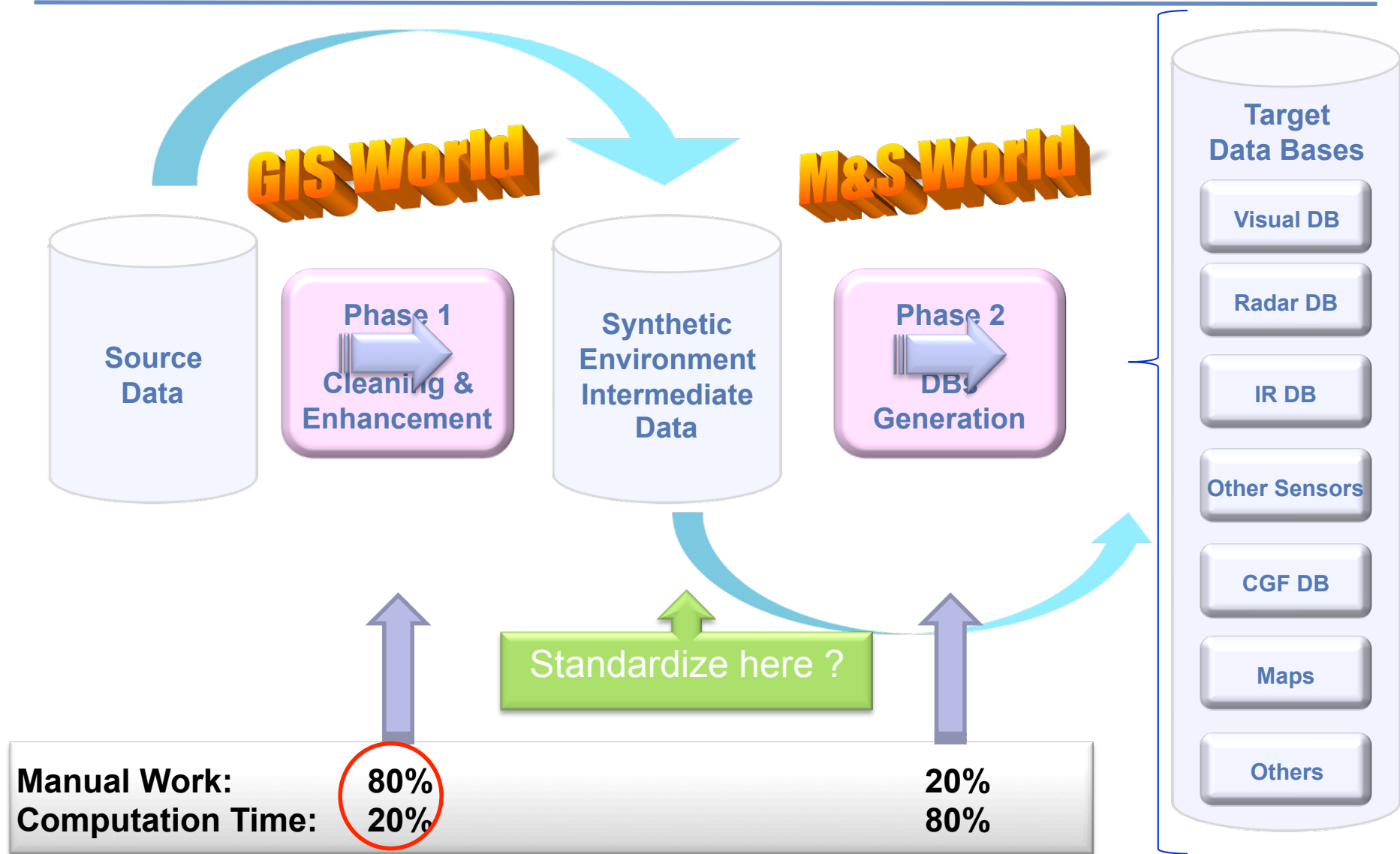
- Clean the data
- Correlate the data
- Format the data
- Intensify the data
- Specialize the data

# Main issues for Distributed Simulation Reuse – Correlation – Interoperability ....





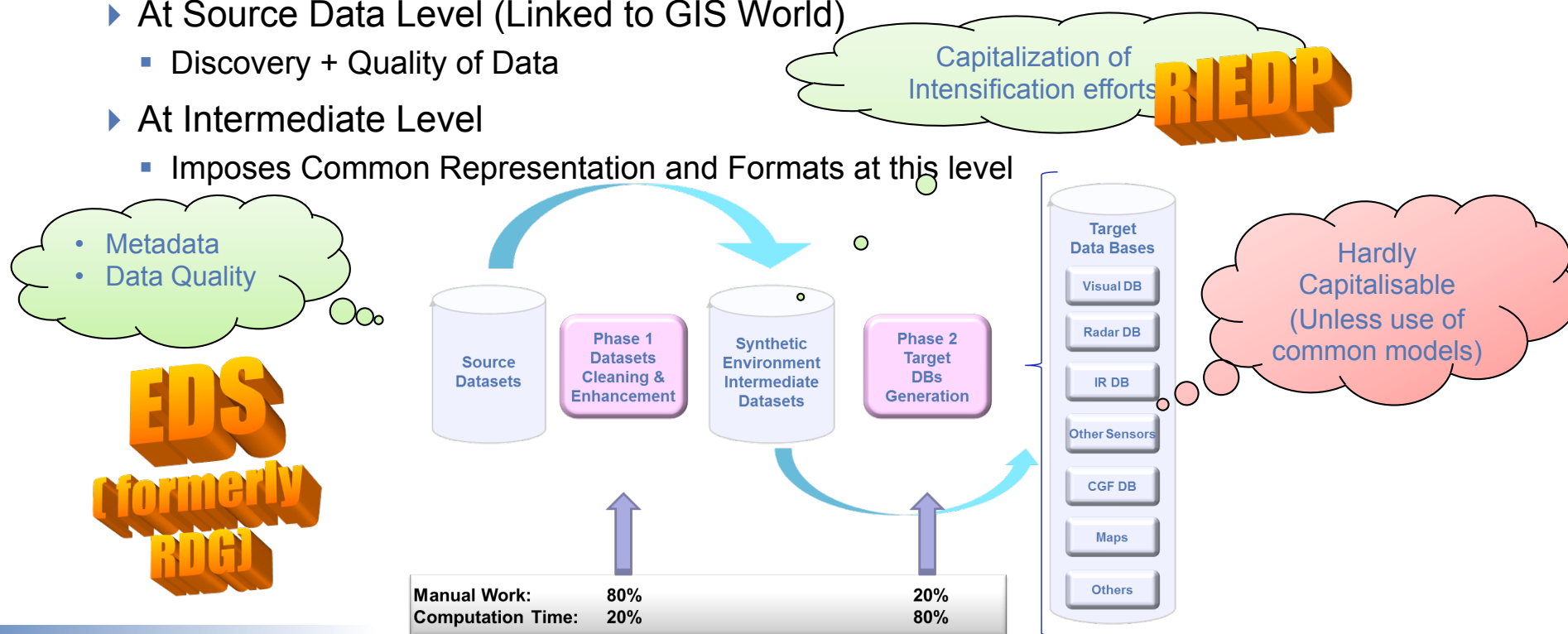
# Transformation Process – Two main phases



## Conclusion (partial)

### 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





## Summary of International Standardization Efforts

Nature	Standards		Initiatives						Other
<b>Name</b>	SIF	SEDRIS	NPSI	AFCD	CDB	SE-Core	Missionland	International	EDS
<b>Origin</b>	US DOD	US DOD	US Navy	USAF	USSOCOM	US Army	NATO	e.g. French Air Force	
<b>Introduction Date</b>	1991	1994	2004	2006	2004	2008	2010	2006	
<b>Standard</b>	Yes	Yes ISO	User Standard	User Standard	User & Commercial Standard	User Standard	User Standard	User Standard	
<b>Open Standard</b>	Yes	Yes	limited	limited	Open Specification	limited	limited	limited	
<b>Approach</b>	Format according to standard	Abstract Data Model + Format according to standard	Based on de-facto Standard						
<b>Availability of Commercial Support Tools</b>	Obsolete	Tools developed in SEDRIS COI	Commercial Tools for Commercial & Standards Formats						

Same geospatial source data formats  
Very similar high level data generation process

## 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:

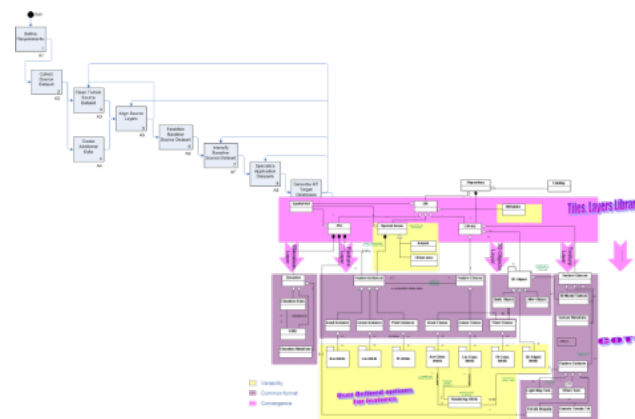
- **RIEDP Data Model Foundations** with two coupled parts:
  - ▶ The Reference Process Model (RPM)
    - High Level representation of the database creation process model
  - ▶ Reference Abstract Data Model (RADM)
    - High level concepts of a database i.e.
    - the principles of Tiles, Layers, Library,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

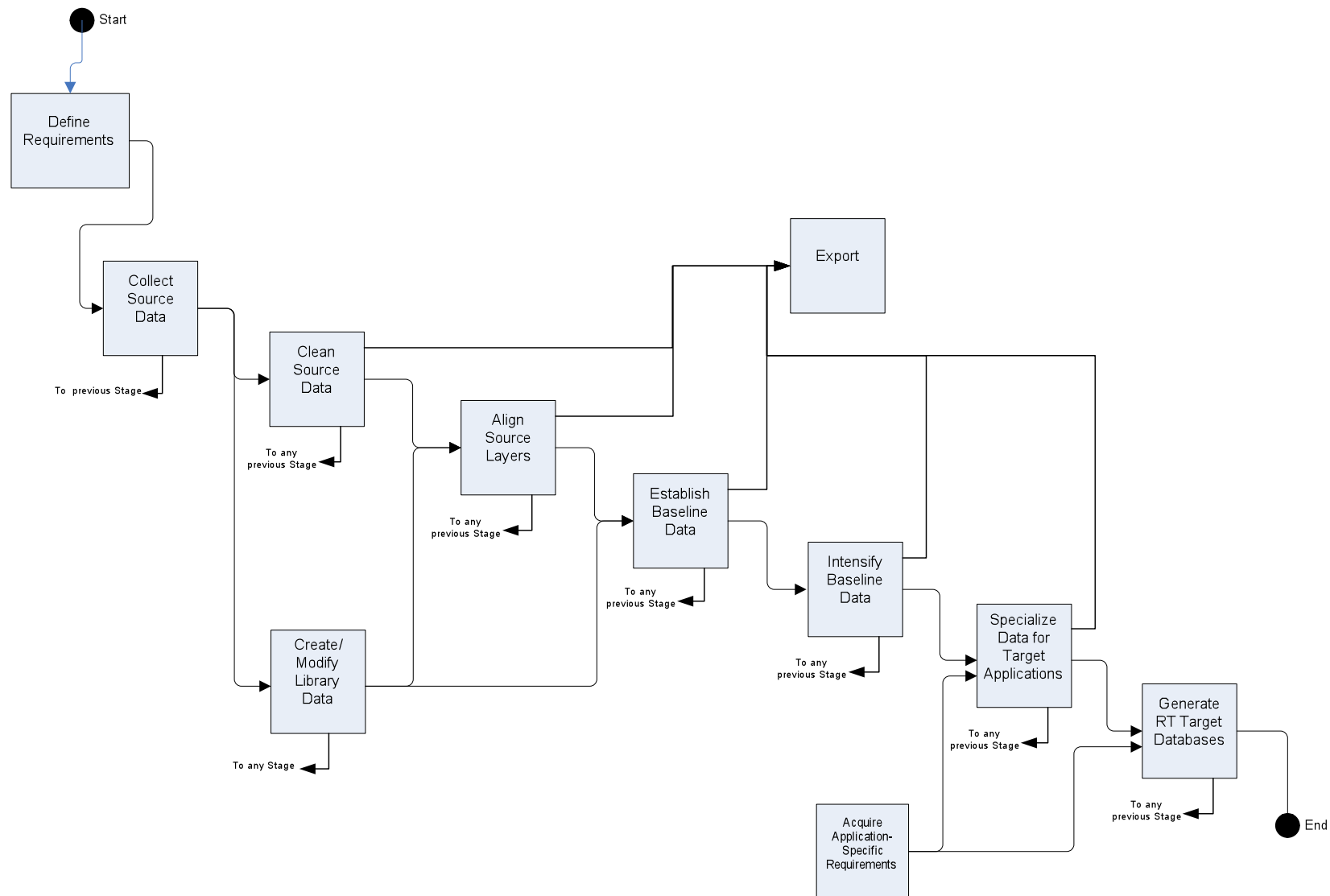


RIEDP DM  
Foundations  
V 0.9e

### Product n°2

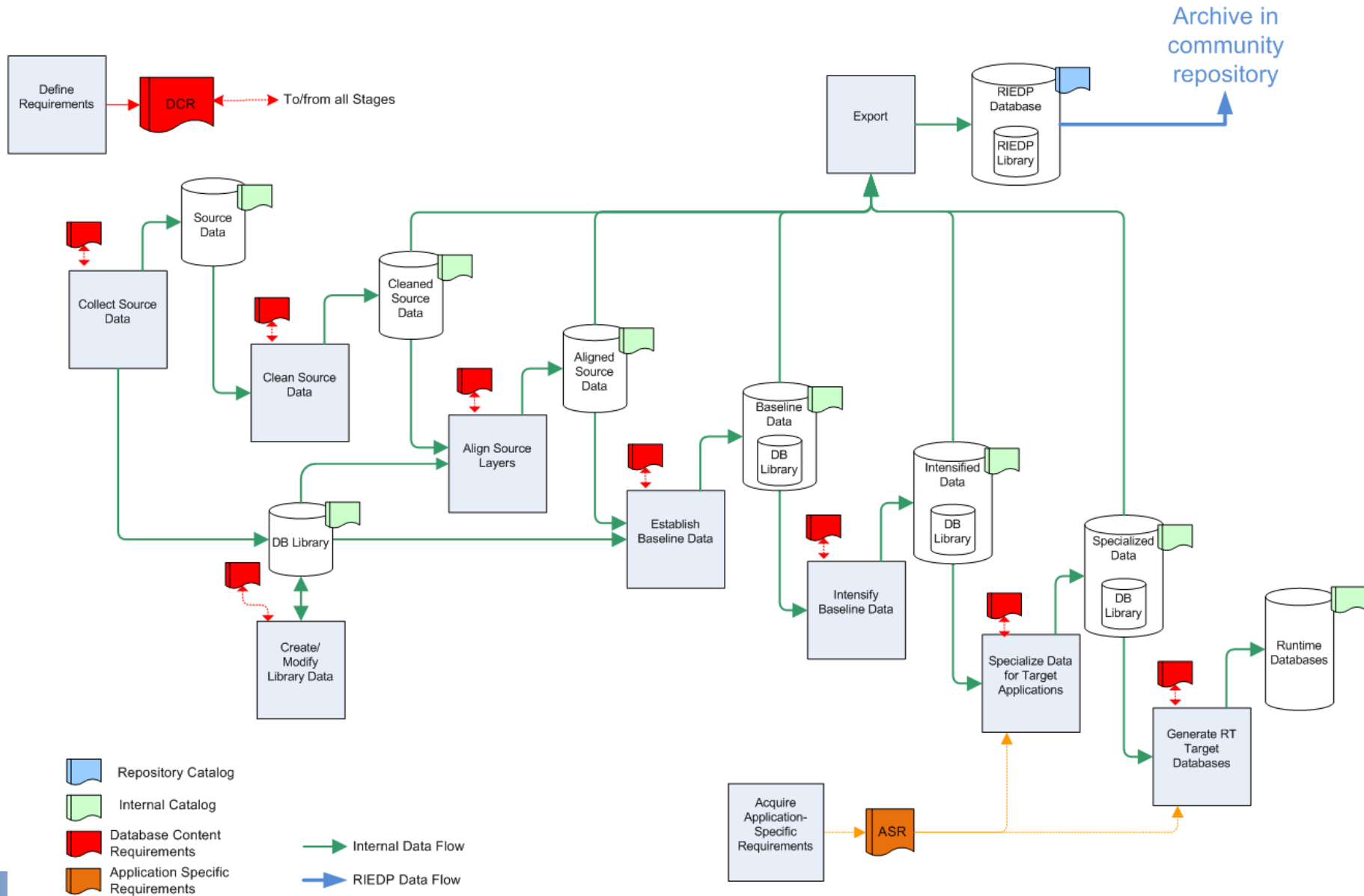
- Initiation of the RIEDP Detailed Features Description
- Fall '15 SIW

# Latest Draft of the RIEDP Reference Process Model Process Flow



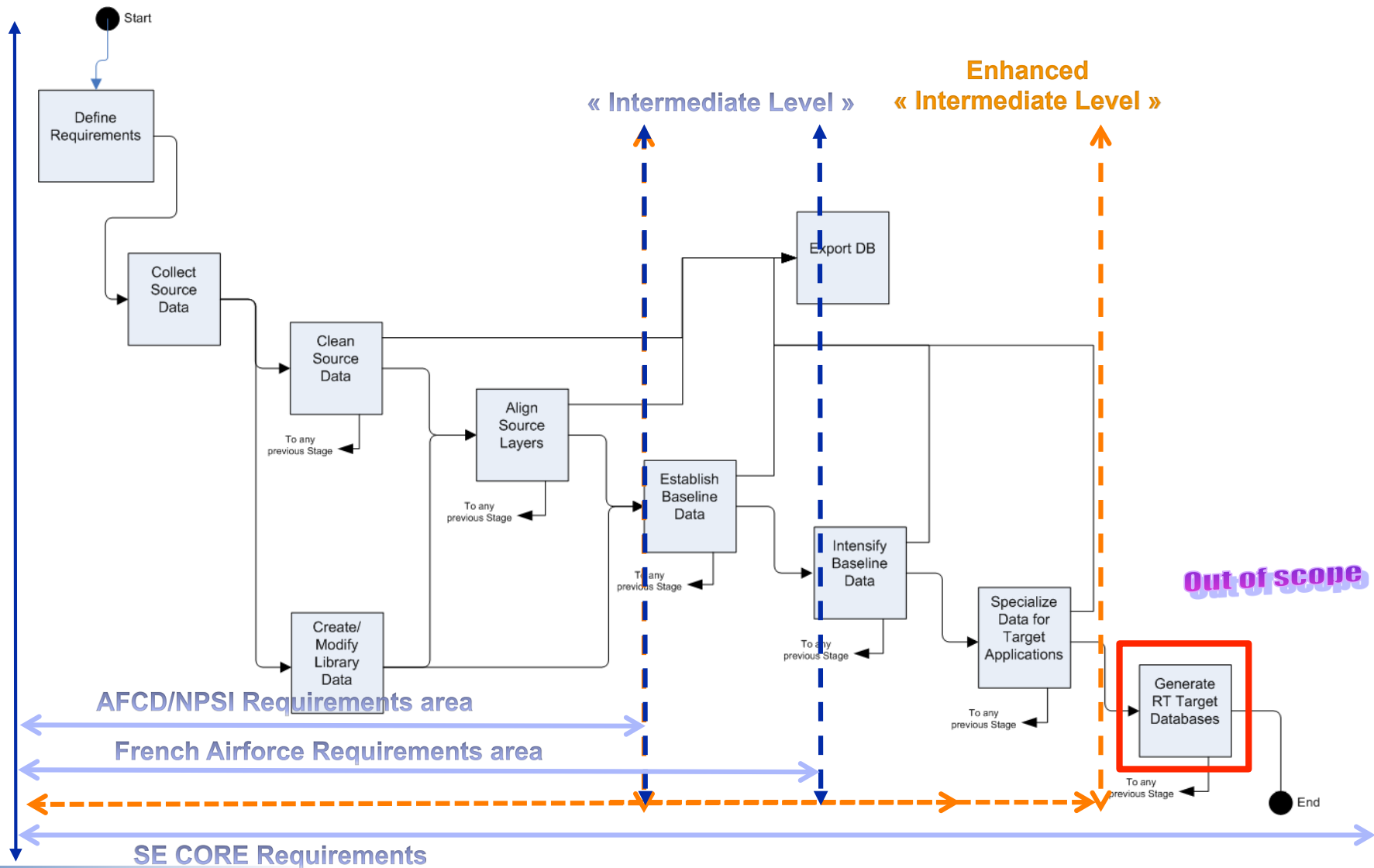
# Latest Draft of the RIEDP Reference Process Model

## Data Flow





# Enhanced Intermediate Level



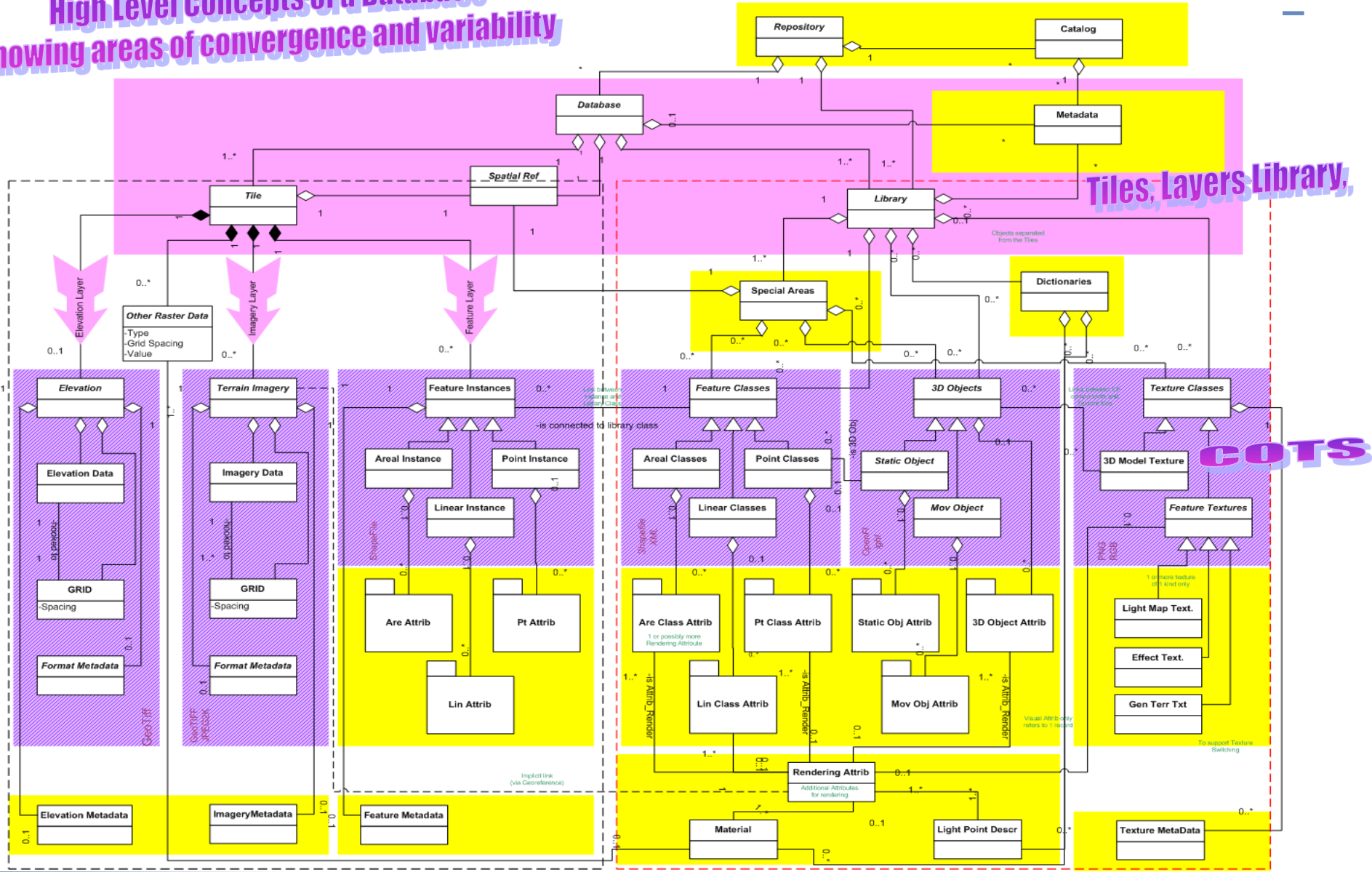


- Variability
- Common format
- Convergence



# RIEDP Reference Abstract Data Model

**High Level Concepts of a Database**  
**Showing areas of convergence and variability**



## RIEDP PDG – Communication Method

---

### 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

Gilbert	CASTANER	SOGITEC	<a href="mailto:gcastaner@sogitec.fr">gcastaner@sogitec.fr</a>
Jack	COGMAN	DataSim	<a href="mailto:jack.cogman@datasim.net">jack.cogman@datasim.net</a>
Paul	FOLEY	DOD Terrain MSEA NGA	<a href="mailto:pjfoley2@verizon.net">pjfoley2@verizon.net</a>
Jean-Louis	GOUGEAT	SOGITEC	<a href="mailto:jlgougeat@sogitec.fr">jlgougeat@sogitec.fr</a>
Warren	MACCHI	ABAMIS	<a href="mailto:wmacchi@abamis.com">wmacchi@abamis.com</a>
Farid	MAMAGHANI	SEDRIS	<a href="mailto:farid@halcyon.com">farid@halcyon.com</a>
Simon	SKINNER	XPI Simulation	<a href="mailto:simon.skinner@xpisimulation.com">simon.skinner@xpisimulation.com</a>
Roland	HUMPHRIES	XPI Simulation	<a href="mailto:roland.humphries@xpisimulation.com">roland.humphries@xpisimulation.com</a>
Bruno	GAUTREAU	Cassidian	<a href="mailto:bruno.gautreau@cassidian.com">bruno.gautreau@cassidian.com</a>
Marc	PETERSON	BSC PARTNERS LCC	<a href="mailto:mpeterson@bsc.com">mpeterson@bsc.com</a>
Greg	PEELE	ARA	<a href="mailto:gpeele@ara.com">gpeele@ara.com</a>
Peggy	GRAVITZ	Aegis Technologies	<a href="mailto:pgravitz@gmail.com">pgravitz@gmail.com</a>
Rob	COX	PEO STRI / RDG	<a href="mailto:rob.m.cox@us.army.mil">rob.m.cox@us.army.mil</a>
Shun	STEWARD	AFRL	<a href="mailto:darryl.steward@us.af.mil">darryl.steward@us.af.mil</a>
Bodo	RANDT	RDE	<a href="mailto:Bodo.Randt@rheinmetall.com">Bodo.Randt@rheinmetall.com</a>
Lance	MARROU	LEIDOS	<a href="mailto:LANCE.R.MARROU@leidos.com">LANCE.R.MARROU@leidos.com</a>
Bob	BRENTS	DOD ASNE MSEA	<a href="mailto:bob.brents.ctr@osd.mil">bob.brents.ctr@osd.mil</a>
Grant	BAILEY	UK MoD	<a href="mailto:DESTECH-EGDTEC-TA@MOD.UK">DESTECH-EGDTEC-TA@MOD.UK</a>
Bill	HOPKINSON	MSCO	<a href="mailto:William.c.hopkinson.civ@mail.mil">William.c.hopkinson.civ@mail.mil</a>
Andreas	REIF	Army WF Sim Center	<a href="mailto:Andreas1reif@bundeswehr.org">Andreas1reif@bundeswehr.org</a>
Sean	DUFF	CAE	<a href="mailto:Sean.duff@caemilusa.com">Sean.duff@caemilusa.com</a>
Jon	LLOYD	DSTL	<a href="mailto:Jplloyd1@dstl.gov.uk">Jplloyd1@dstl.gov.uk</a>
Will	OLIVER	DSTO	<a href="mailto:William.oliver@dsto.defence.gov.au">William.oliver@dsto.defence.gov.au</a>
Roy	SCRUDDER	Univ Texas	<a href="mailto:roy.scrudder@arlut.utexas.edu">roy.scrudder@arlut.utexas.edu</a>
Eric	SEGUINEAU DE PREVAL	French Army	<a href="mailto:eric.seguineau-de-preval@intradef.gouv.fr">eric.seguineau-de-preval@intradef.gouv.fr</a>
Greg	ENOCHIAN	AFMC	<a href="mailto:david.enochian.2@us.af.mil">david.enochian.2@us.af.mil</a>





**Thank you for your attention !**

**Any questions ?**



**Please Join !**