EUCLID CEPA 11 RTP 11.19 HLA Natural Environment Federation

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THALES

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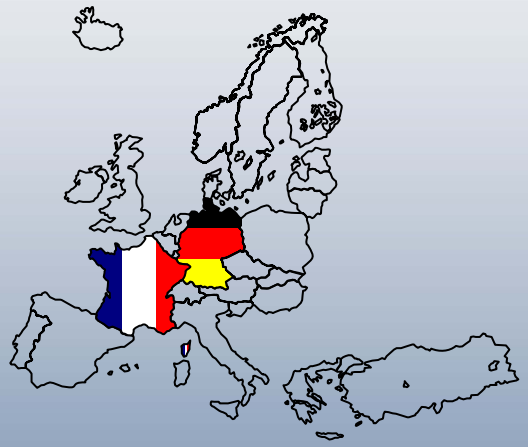
Program Description



- Continue the previous Euclid RTP 11.10 « DIS Environment Database Server »
- Real-time representation of SNE and dynamic effects

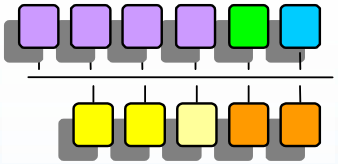
- Adaptation to HLA for data interchange and interaction mechanism
- Use of SEDRIS for SNE static and dynamic representation

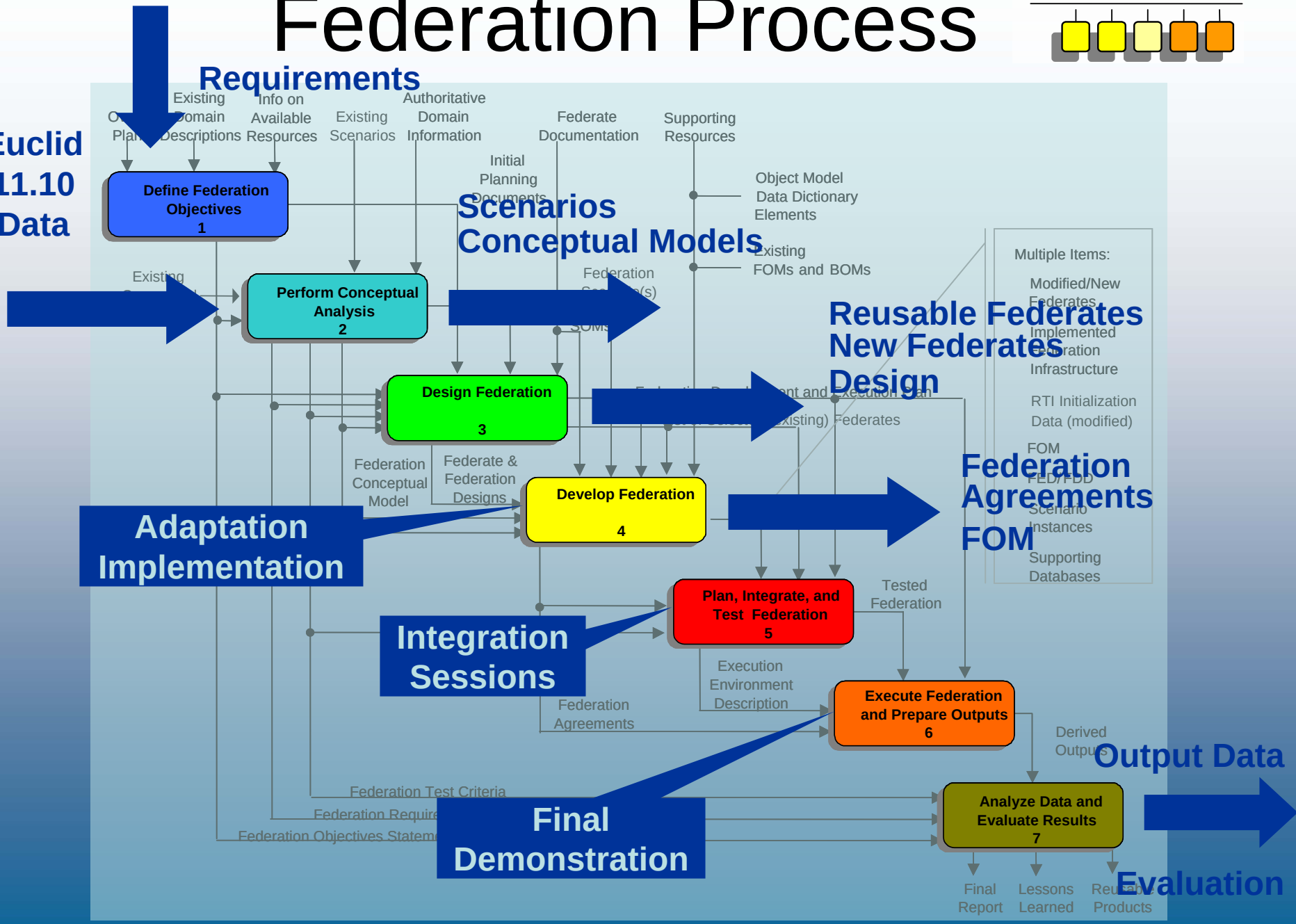
Thales

CAE Elektronik
EADS Deutschland

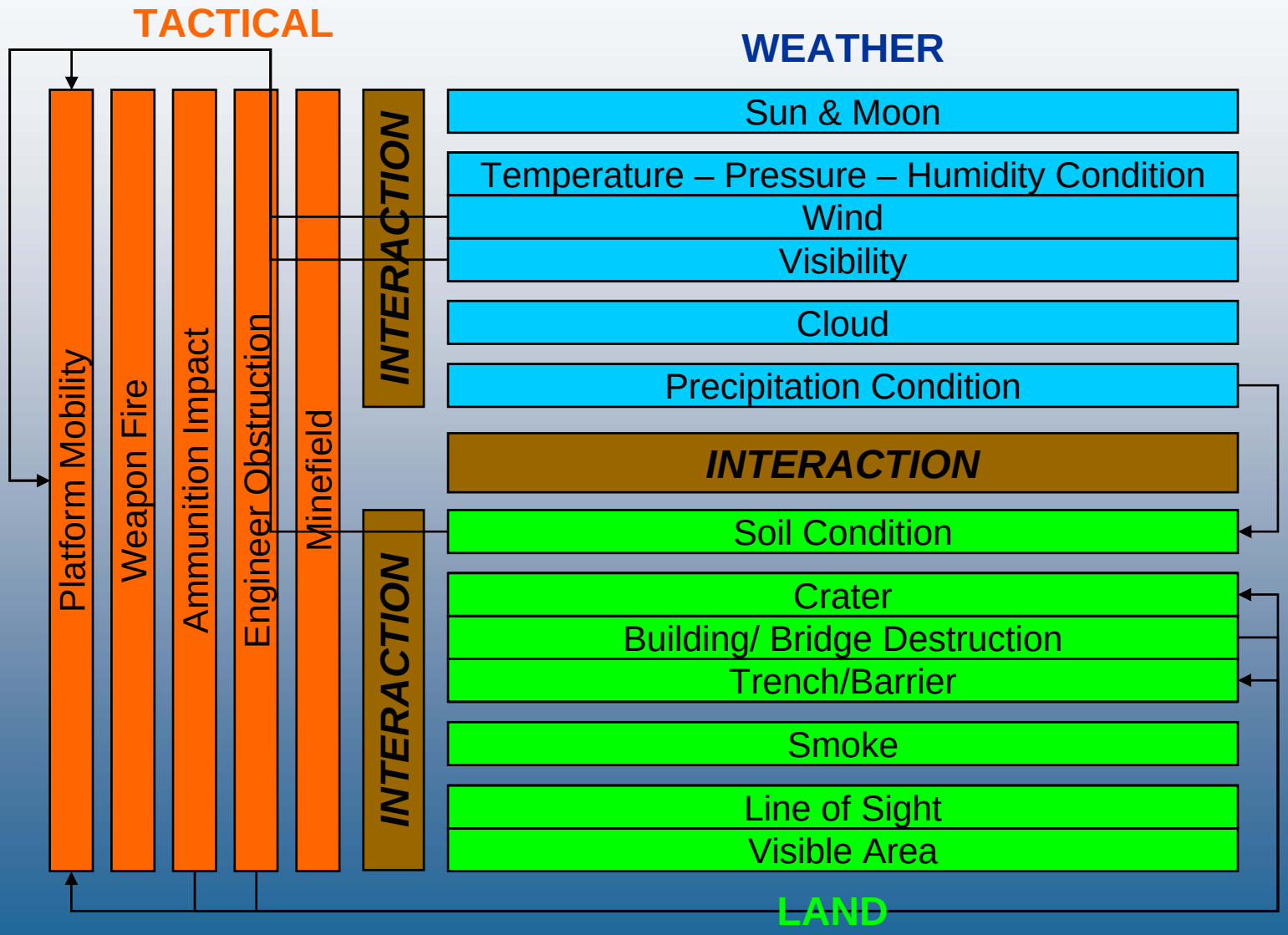
Leadership: France
Start: 7th February 2002
Final Demonstration: 26th February 2004

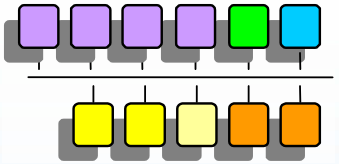
Federation Process





Effects

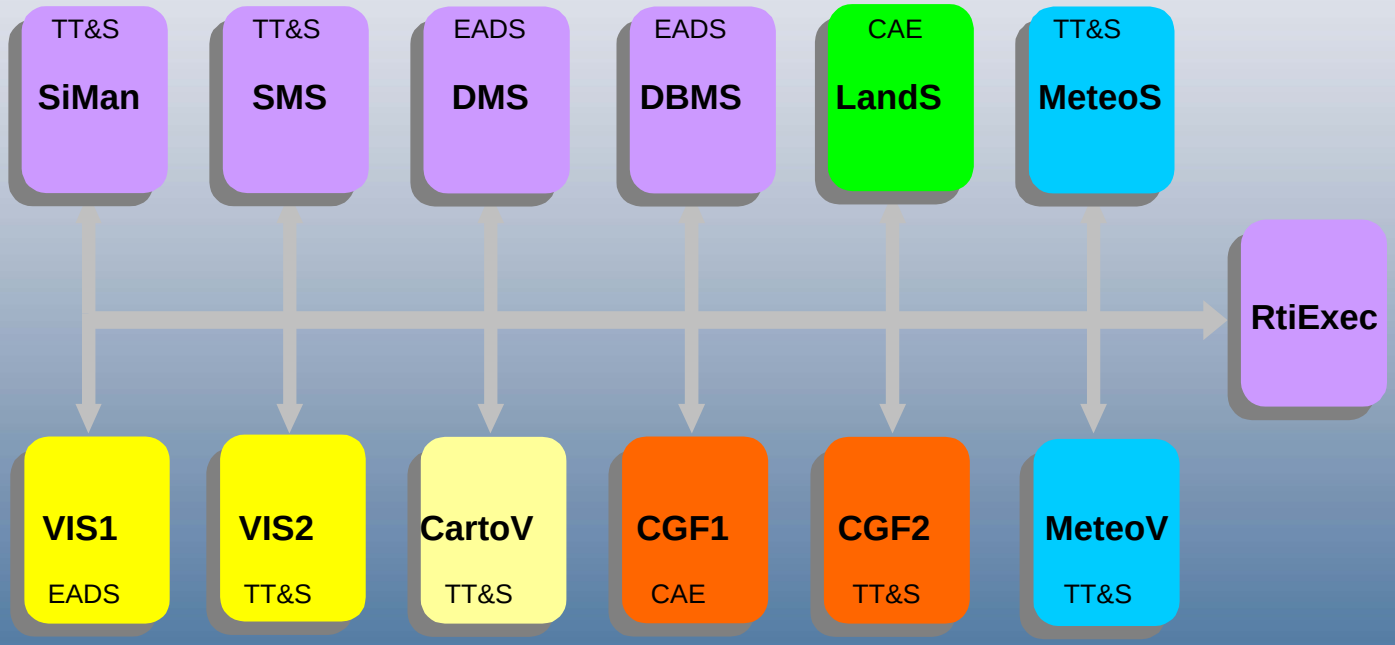

TACTICAL
WEATHER
Platform Mobility
Weapon Fire
Ammunition Impact
Engineer Obstruction
Minefield
INTERACTION
INTERACTION
INTERACTION
Sun & Moon
Temperature – Pressure – Humidity Condition
Wind
Visibility
Cloud
Precipitation Condition
INTERACTION
Soil Condition
Crater
Building/ Bridge Destruction
Trench/Barrier
Smoke
Line of Sight
Visible Area
LAND



Simulation Services

Simulation Service	Category	Federate
Management	SNE Servers	SiMan
		SMS
		DMS
		DBMS
Land Simulation		LandS
Meteo Simulation		MeteoS
Visual Simulation	SNE Clients	VIS1
		VIS2
Tactical Simulation		CGF1
		CGF2
Meteo Visualization		MeteoV
Map Visualization		CartoV

Demonstrator’s Architecture



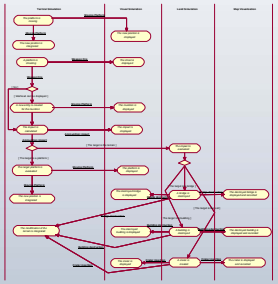
Scenarios Description

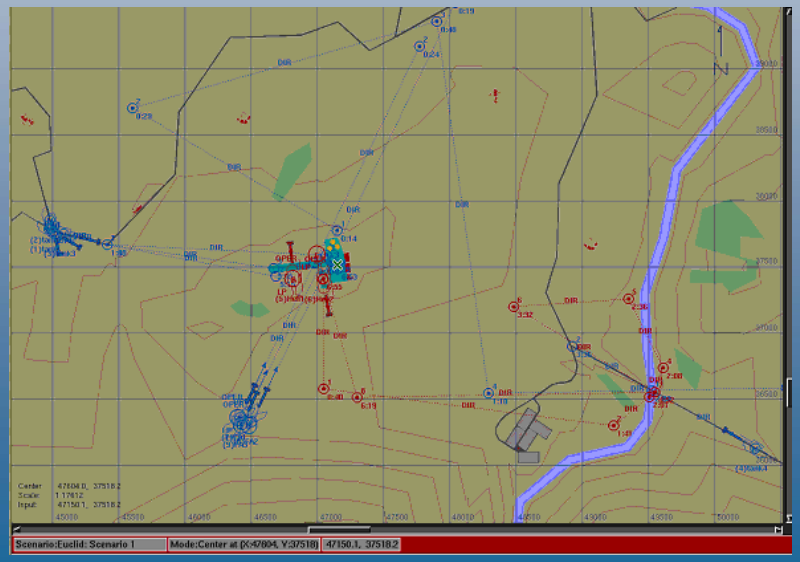
Support Effects on Ground Operation	Scenarios	1	2	
Weather Effects on Ground Operation	Scenarios	3	4	
Weather Effects on Airborne Operation	Scenarios	6		
Interrogation Usage	Scenarios	13		
Management Usage	Scenarios	14	16	
Tests	Scenarios	17	18	19

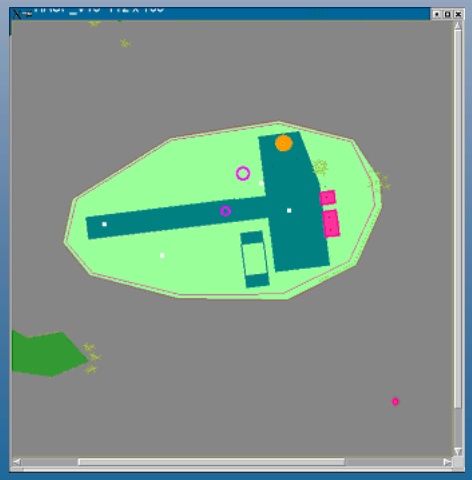
Scenario 1

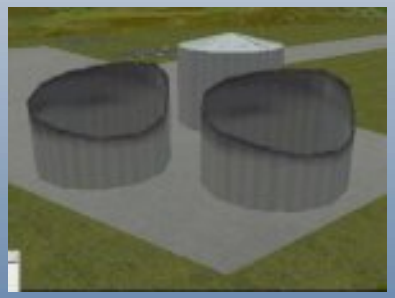
Artillery and Air support effects on ground operation

- Airfield attack by both MBTs and Aircrafts with Helicopter support
- Destruction of bridge, tank-oil and control tower
- Cratering of the ground
- Storage of the dynamic effects in the SEDRIS terrain database





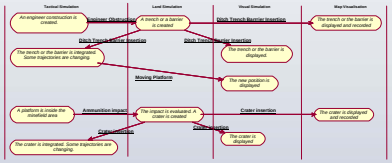


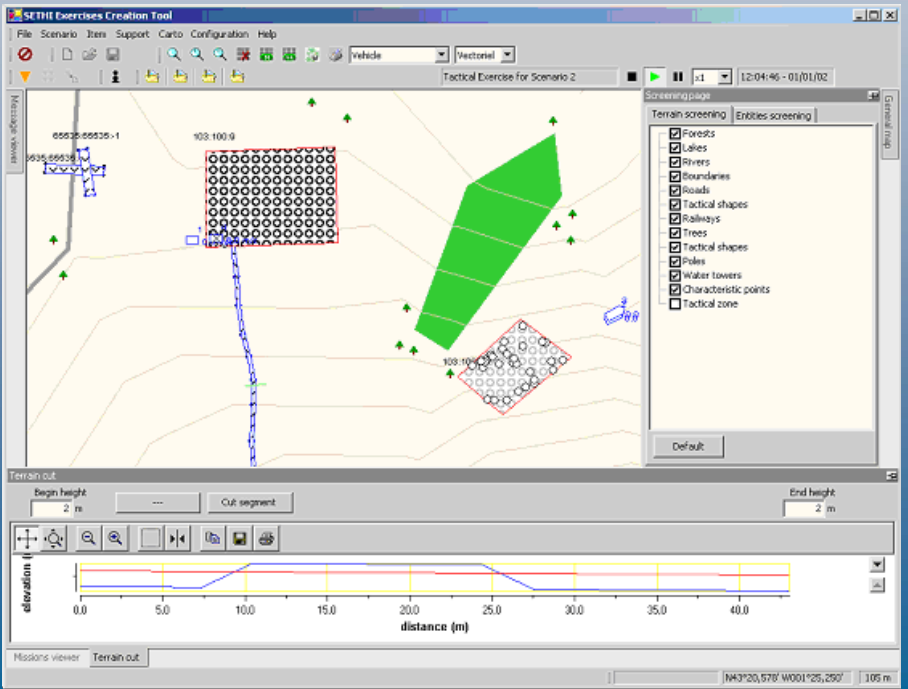


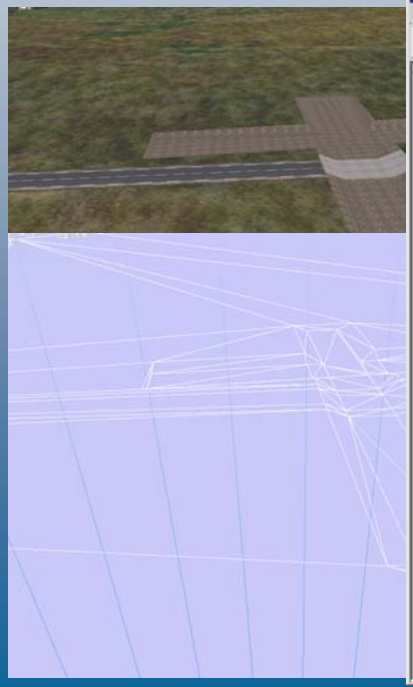
Scenario 2

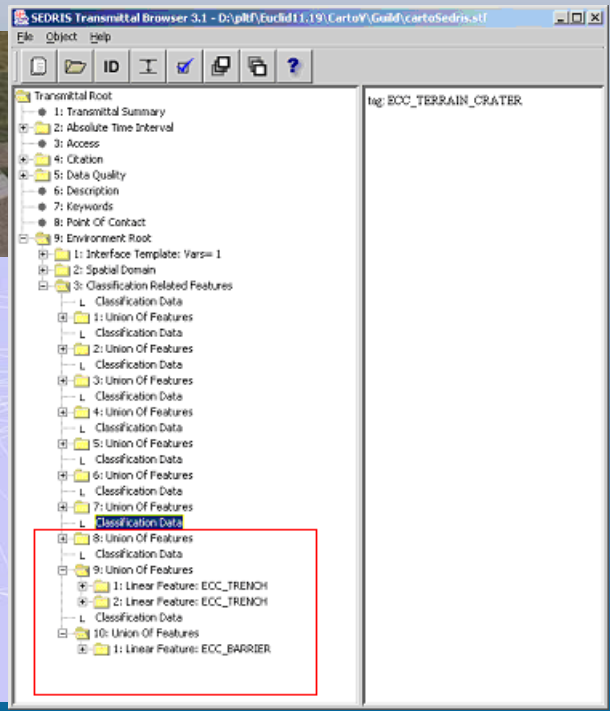
Engineer support effects on ground operation

- Progression of MBTs and AICVs with engineer obstructions (trenches, barriers and minefield) under Artillery indirect fire
- Storage of the dynamic effects on the SEDRIS terrain database





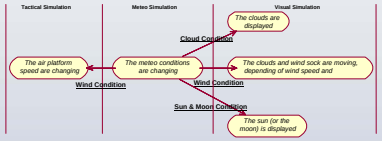


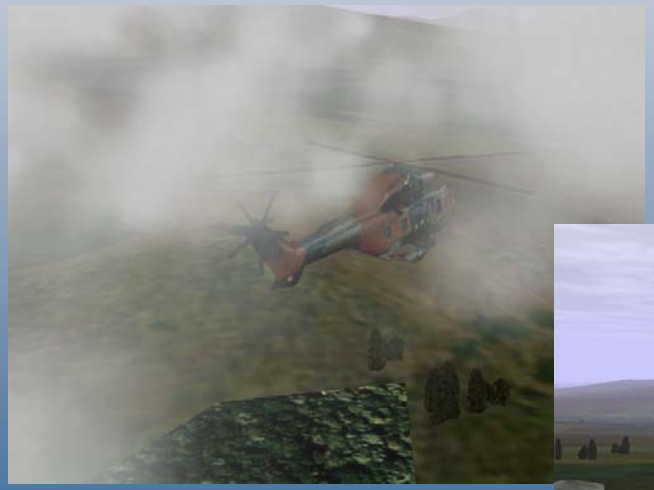


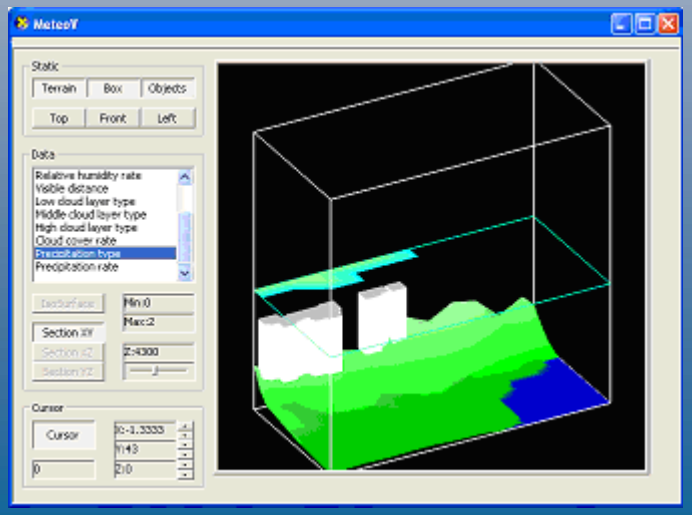
Scenario 6

Clouds effects on airborne operation

- Helicopter fly under and through 3D cloud representation
- Influence of wind at low altitude on the airfield equipment
- Visualization of the meteo effects







FOM

- Development strategy: Existing/Reference FOM

  Building from pre-existing References FOMs

  Possible adaptation for new effects

  - RPR FOM
  - EnviroFed FOM
  - Euclid 11.10 “FOM”
- Naming conventions
- EDCS references

  Addition of EDCS references in description, matching the latest SEDRIS v3.1.0 version
- Effects = Objects or Interactions ?

  . If an effect can have different values of some attributes during its lifetime, it is defined as an object (ex: a 2D grid of precipitation)

  . If an effect has no lifetime or if all its attributes change, it is defined as an interaction (ex: a crater)

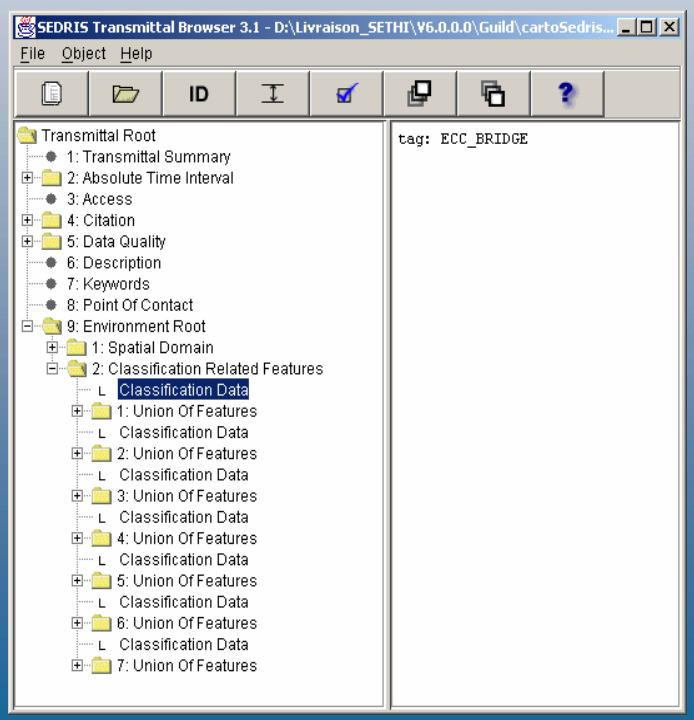
SEDRIS

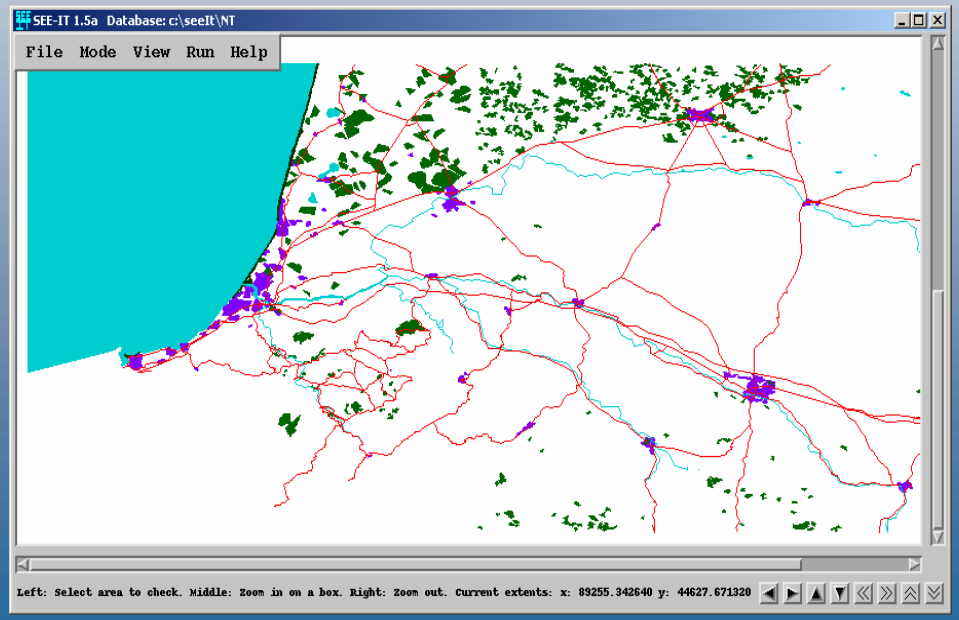
- Use of SEDRIS Environmental Data Coding Specification (EDCS) for SNE objects and interactions identification for Land and Meteo effects

- Use of SEDRIS Transmittal Format (STF) to support the different information/data required to represent the dynamic Natural Environment (Land and Meteo effects)

CartoV and Dynamic use

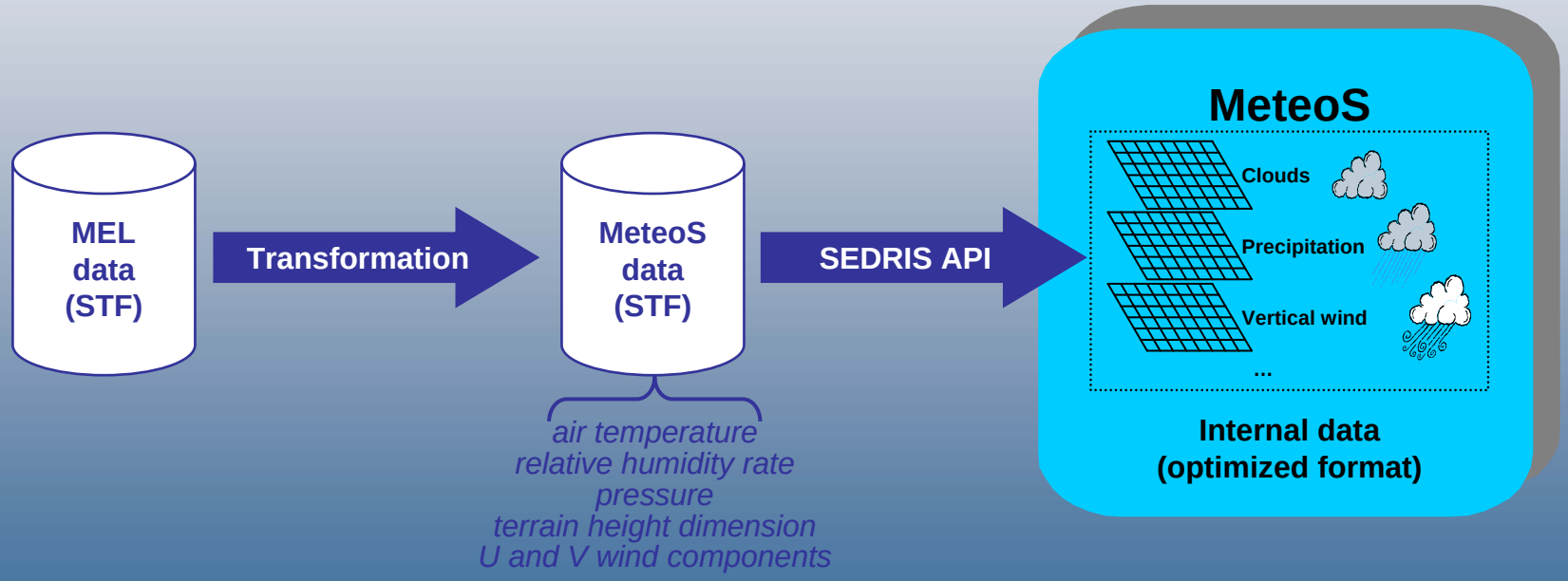
- Use a SEDRIS terrain representation
- Support real-time modification of the terrain database
- Allow post-exercise visualization of the resulting terrain database using the available SEDRIS tools





SEDRIS and MeteoS

- Use Master Environmental Library source data
- Transform source data to a specific representation



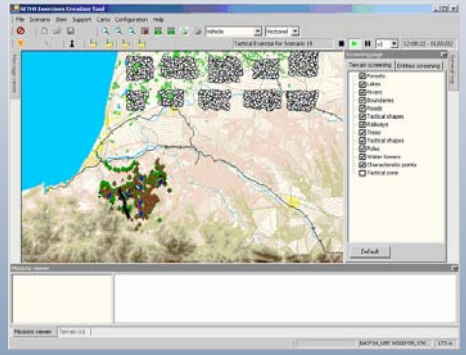
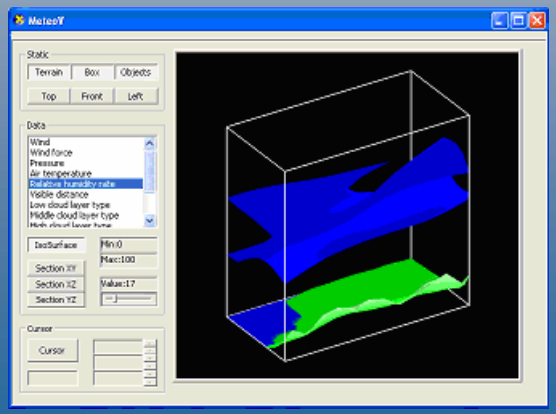
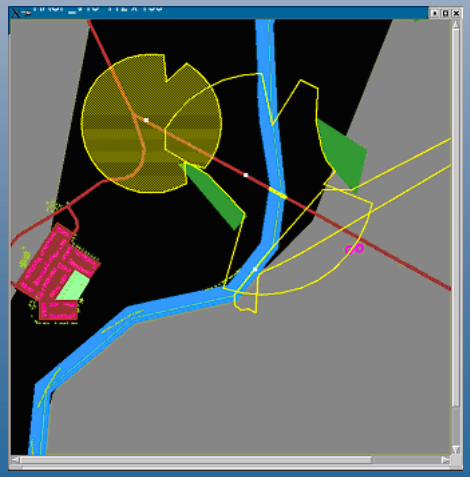
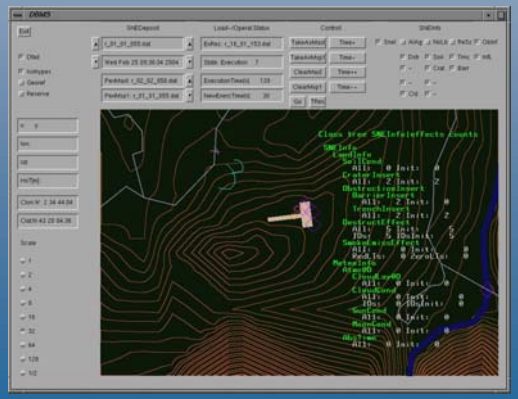
Lessons Learned, Strengths

- Useful services, especially Object Management
  - Notification for created / deleted objects
  - Notification for updated attributes
- Numerous tools available
  - Different RTIs
  - .omt Editors
  - Datalogger

Lessons Learned, Weaknesses

- The whole federation had to be restarted if one federate terminated without resigning the federation
- Allocation of objects was slow
- Data Serialization was not normalized
  - Data marshalling had to be handled by HLA developers
  - Explicit definition of the size was required for variable-length arrays
- Few ‘FOM agile’ tools
  - Lots of them principally support the RPR-FOM

Recommendations

- Exchange interoperable data (those that will be exchanged using RTI) between partners early in the program (using datalogger tools) and before integration
- Test and validate Federation Agreements (coordinate systems, databases, time and object management, etc.) early in the program
- Use EDCS for FOM description
- Use SRM for coordinate transformation and description
- Use SEDRIS tools (test & check, visualization, manipulation, import/export) for database verification

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