Baghera View V3

A new generation of STEP based models viewer and synthesizer based on virtual reality and open source technologies

19th European Workshop on Thermal and ECLS Software

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ESA/ESTEC
The Netherlands

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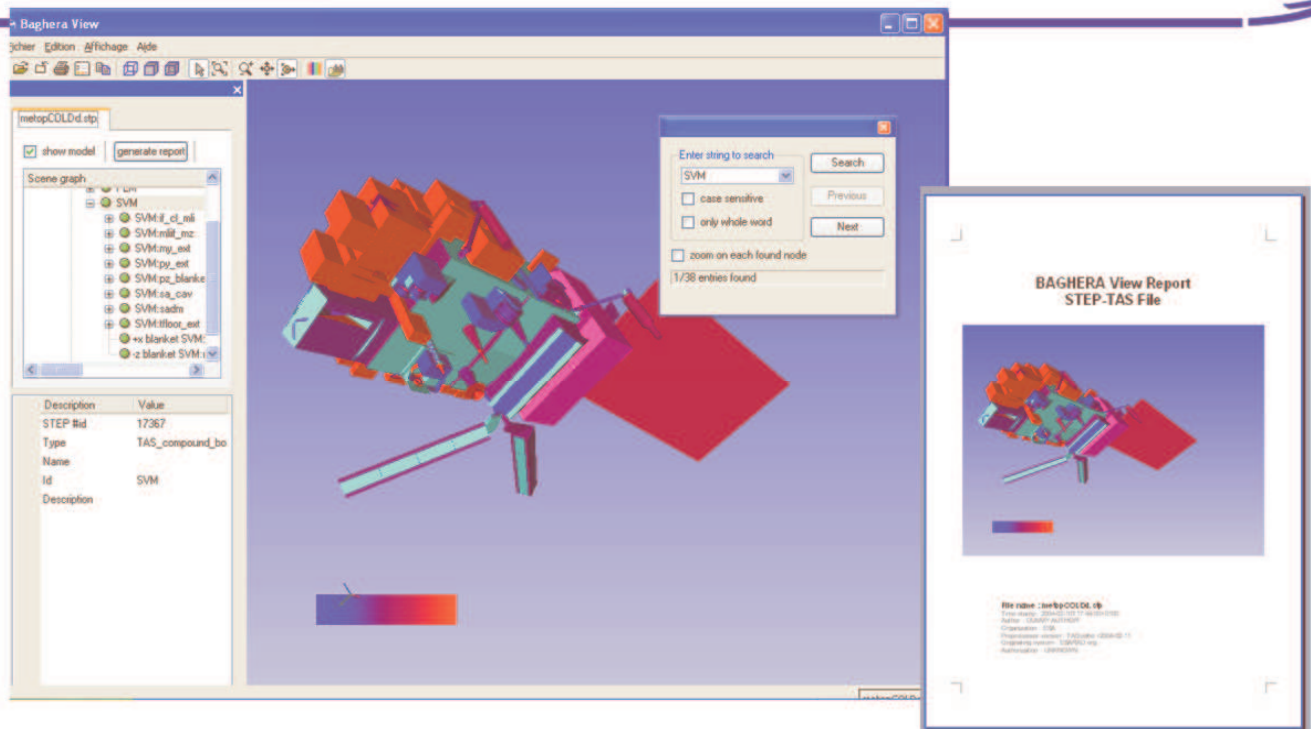& Jean-Luc Le Gal - CNES

Current and new functions

- Loading / superposing several STEP models into one 3D session
    - STEP-TAS, AP203/214
    - Integration of TASverter (ESARAD, THERMICA)

- Browsing hierarchy, searching for elements

- 3 rendering modes : wire frame, solid, transparency

- Elements properties display
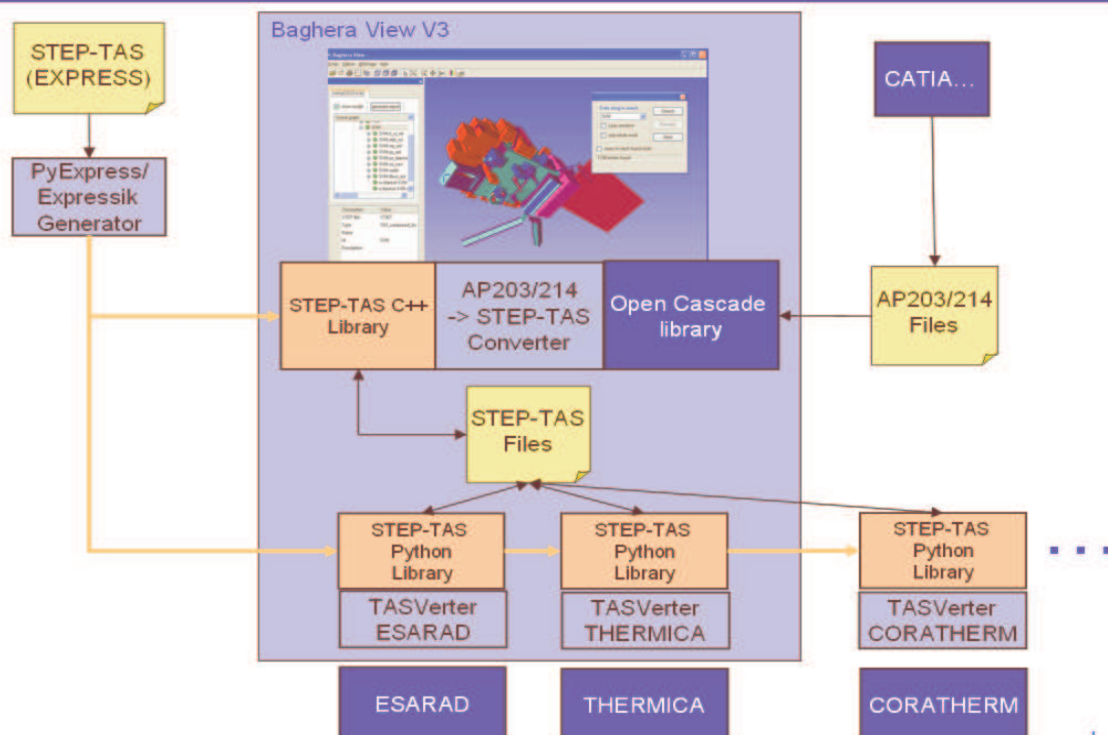   - With table of colors

- Generating reports

Demonstration

Summary : A new architecture

On – going development

- ## Integration and validation of STEP-TAS 5.3

- ## XML report generation for MS Office 2003
  - ### With report layout tracking system
    - Means that the layout and style of a document prepared by an engineer, is kept, when the STEP model is upgraded

- ## Automatic semantic comparison

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Status

- ## Baghera View is developed under CNES contract

- ## CNES agrees for free distribution of Baghera View in Europe

- ## Distribution will start as soon as STEP-TAS 5.3 is integrated and validated
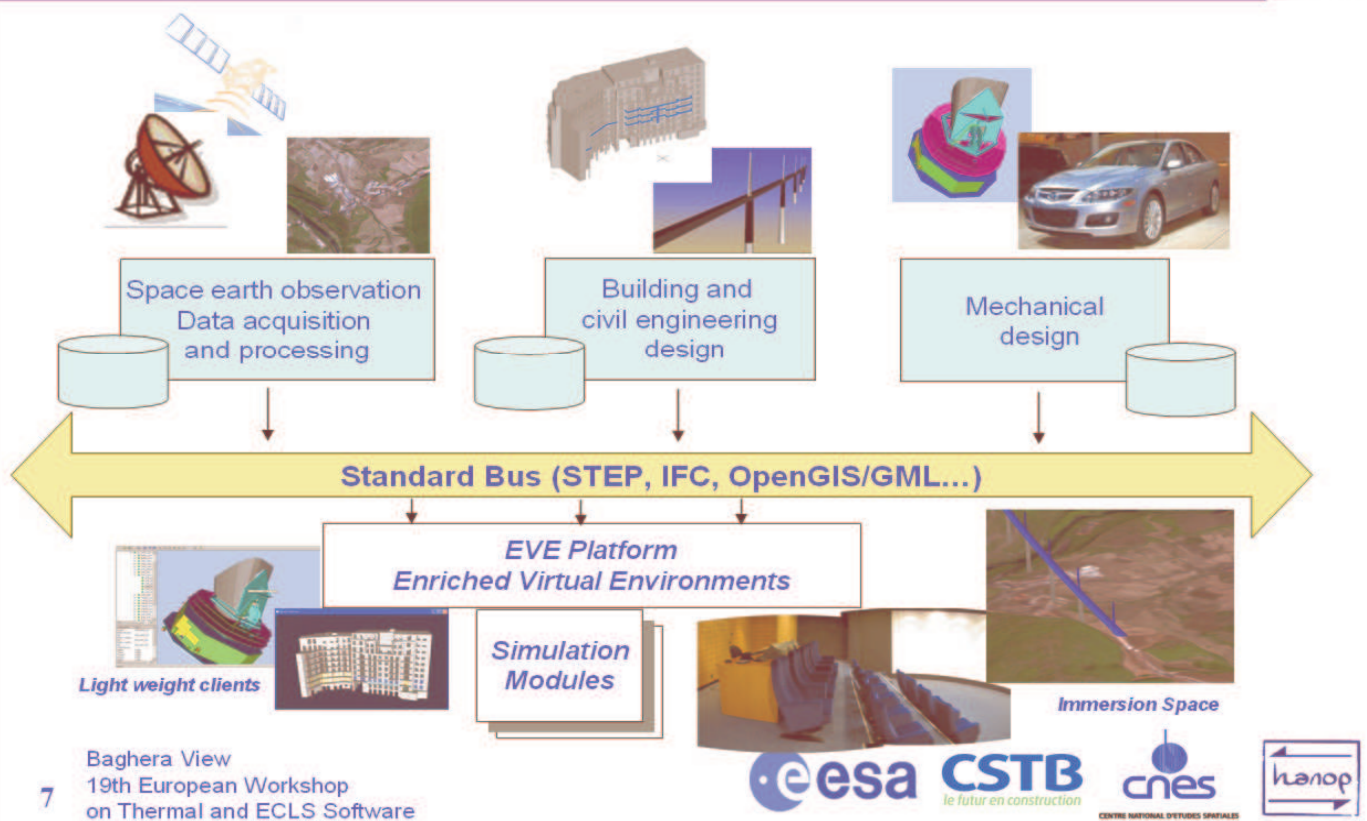 - ### Before end of 2005

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Development context : CSTB EVE Platform

Space earth observation
Data acquisition
and processing

Building and
civil engineering
design

Mechanical
design

Standard Bus (STEP, IFC, OpenGIS/GML…)

EVE Platform
Enriched Virtual Environments

Light weight clients

Simulation
Modules

Immersion Space

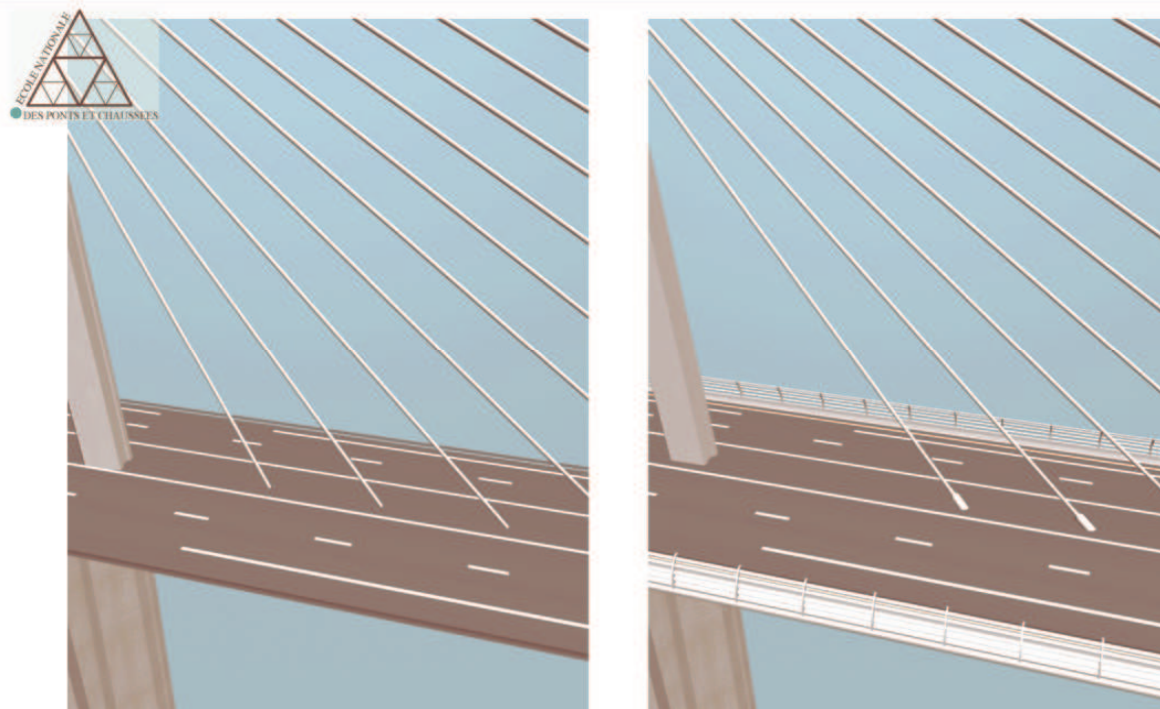
EVE Purpose

- EVE = Enriched Virtual Environment

- <u>Integration</u> and <u>checking</u> of multi-sector and multi-disciplinary virtual detailed models and scenes
  - Geographical, earth environment data (CSTB is partner of CNES for the ORFEO/PLEIADES program)
  - Buildings, civil engineering and urban data
  - Mechanical data (automotive, aeronautic, spacecraft…)
  - With semantic models comparison capabilities

- Interaction with valid scientific simulators
  - Including automatic models inter-disciplinary converters
  - For models and scenes analysis and animations

- High-level results display and reporting
  - Light-weight client terminals
  - Immersion space
  - Interaction with "standard" MS Office platform

Technologies – the CSTB / EVE Platform
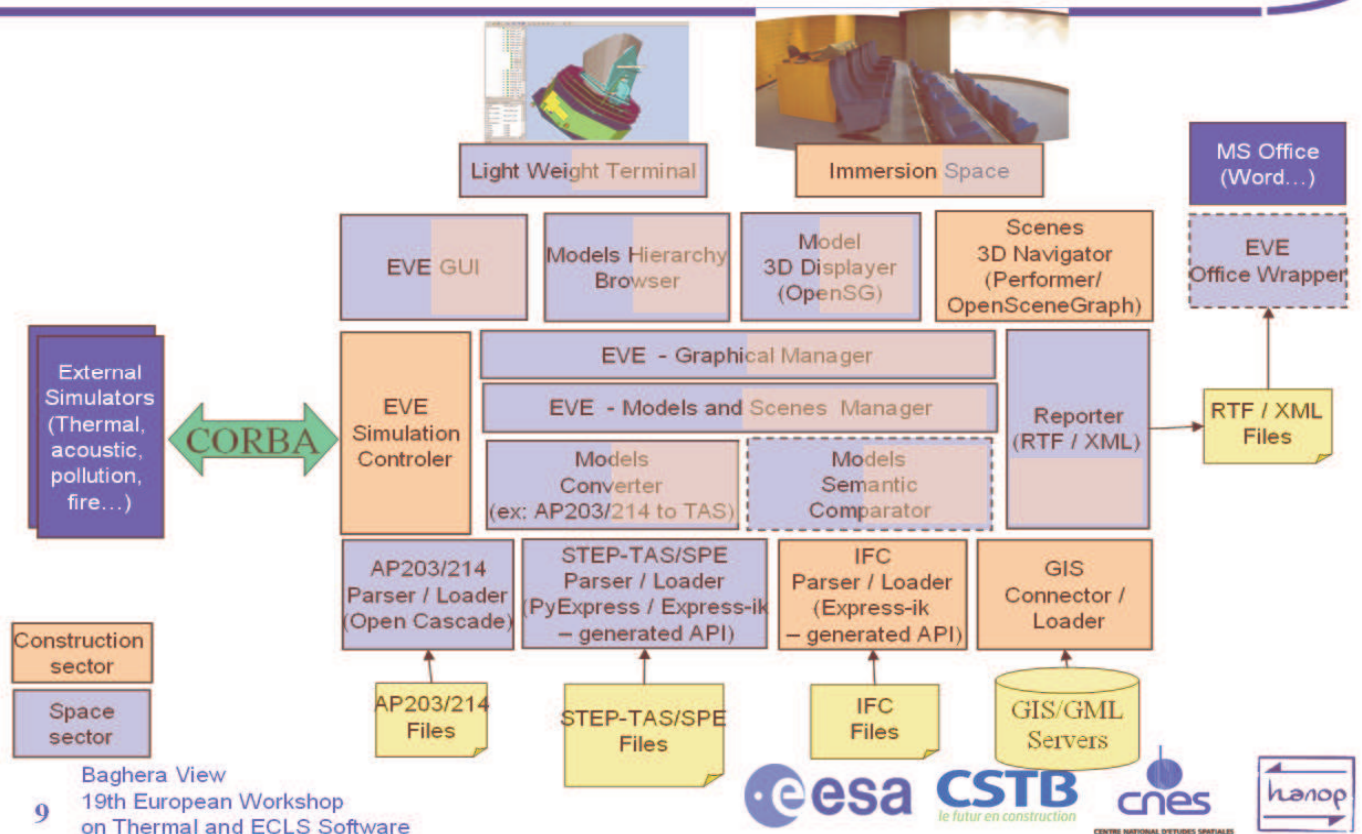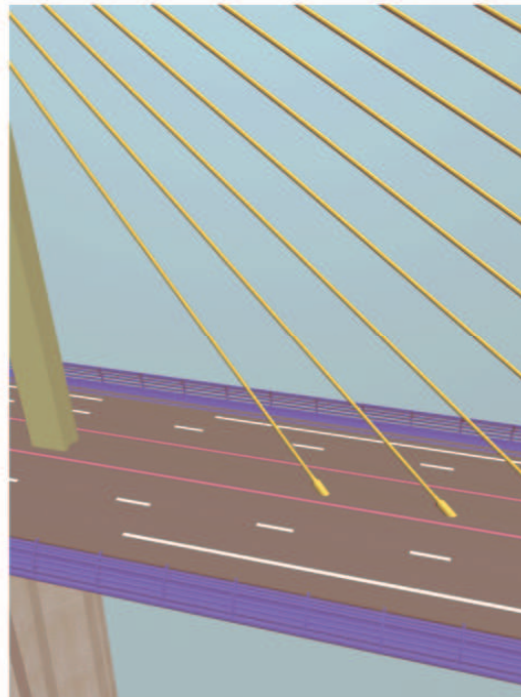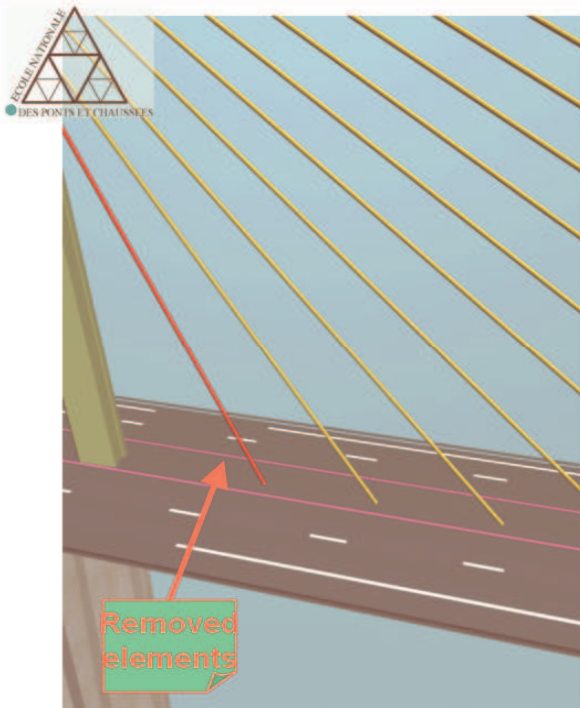
External Simulators (Thermal, acoustic, pollution, fire…)

CORBA

Light Weight Terminal

Immersion Space

MS Office (Word…)

EVE GUI

Models Hierarchy Browser

Model 3D Displayer (OpenSG)

Scenes 3D Navigator (Performer/ OpenSceneGraph)

EVE Office Wrapper

EVE Simulation Controler

EVE - Graphical Manager

EVE - Models and Scenes Manager

Models Converter (ex: AP203/214 to TAS)

Models Semantic Comparator

Reporter (RTF / XML)

RTF / XML Files

AP203/214 Parser / Loader (Open Cascade)

STEP-TAS/SPE Parser / Loader (PyExpress / Express-ik – generated API)

IFC Parser / Loader (Express-ik – generated API)

GIS Connector / Loader

AP203/214 Files

STEP-TAS/SPE Files

IFC Files

GIS/GML Servers

Construction sector

Space sector

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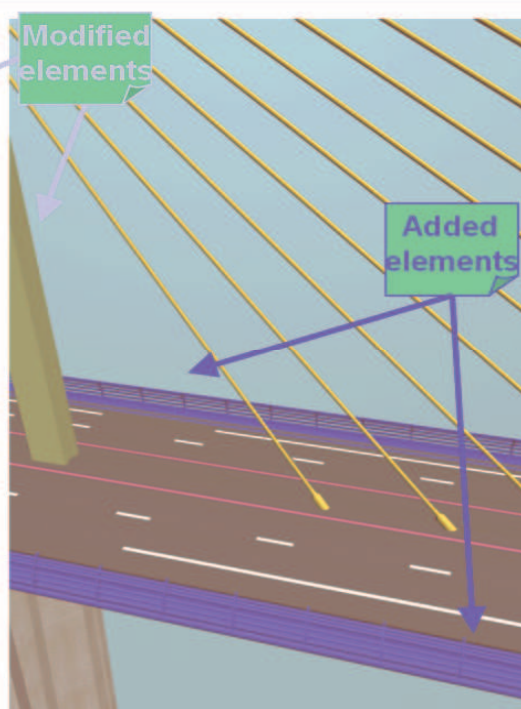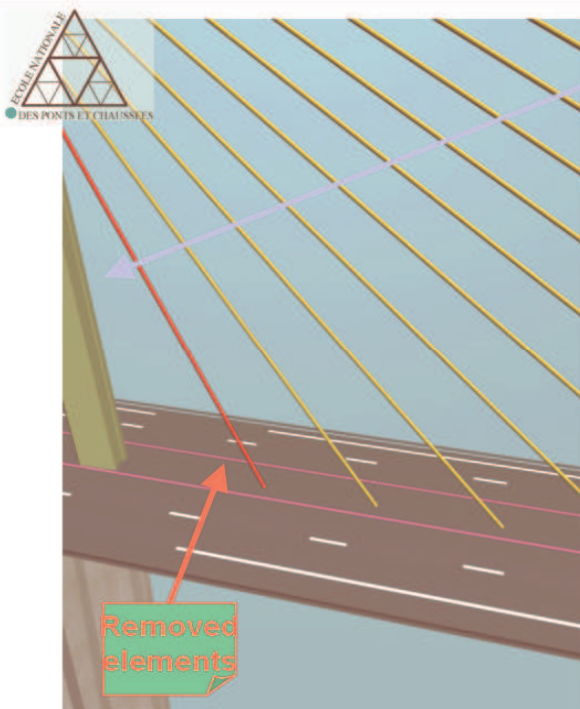
Coming soon : Semantic comparison

Geoffrey ARTHAUD

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Similarities & complementarities between space and constructions sectors

- Similarities
    - Building and spacecraft are often unique - No large "series" production problems
    - Equivalent "simple" geometry is sufficient - NURBS are rarely required
    - Large consortium for a single project - A lot of co- an sub-contractors...
    - STEP is applicable
        - TAS/SPE, 203... for space
        - IFC for construction

- Complementarities
    - Of the construction sector:
        - A lot of different **"object oriented"** CAD tools (Autodesk, Allplan, Graphisoft, Graitec...)... with exchange problems
        - A very large number of potential users (ex: AutoCAD number of licenses must be counted in millions !)
        - a very good reliability of software required and obtained
    - Of the space sector:
        - A significant advance in 3D and object-oriented methodology and practice

« Bienvenue » at next ESA/NASA PDE 2006 workshop

- Planned April 25-28, Cannes – Sophia-Antipolis
- Theme : "Data exchange and Virtual Environment for the space domain"
- "Immersion Day" in the Le Corbusier Immersion Space
  - With space-craft models contest
  - Baghera View will be used for candidate preparation

http://salle-immersive.cstb.fr

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Thank you for your attention

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