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Baghera View
The New Version of the STEP Based Models Viewer and Synthesiser Based on Virtual Reality and Open Source Technologies

Thermal & Fluids Analysis Workshop (TFAWS) 2006
The University of Maryland College Park & NASA's Goddard Space Flight Center, Maryland, USA

9 August 2006

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Baghera View
the Need of a Reference Viewer

- Success of .doc or .rtf format is because (almost) everybody has Microsoft Word on its desktop
  - Even if it is only for displaying and printing a document from a partner
- In AEC sector, success of DXF/DWG format is because (almost) every architect, civil engineer or constructor has AutoCAD on its desktop
  - Even if it is only for displaying and printing 2D drawings
- An equivalent Reference Viewer is required if we want to have success for STEP !

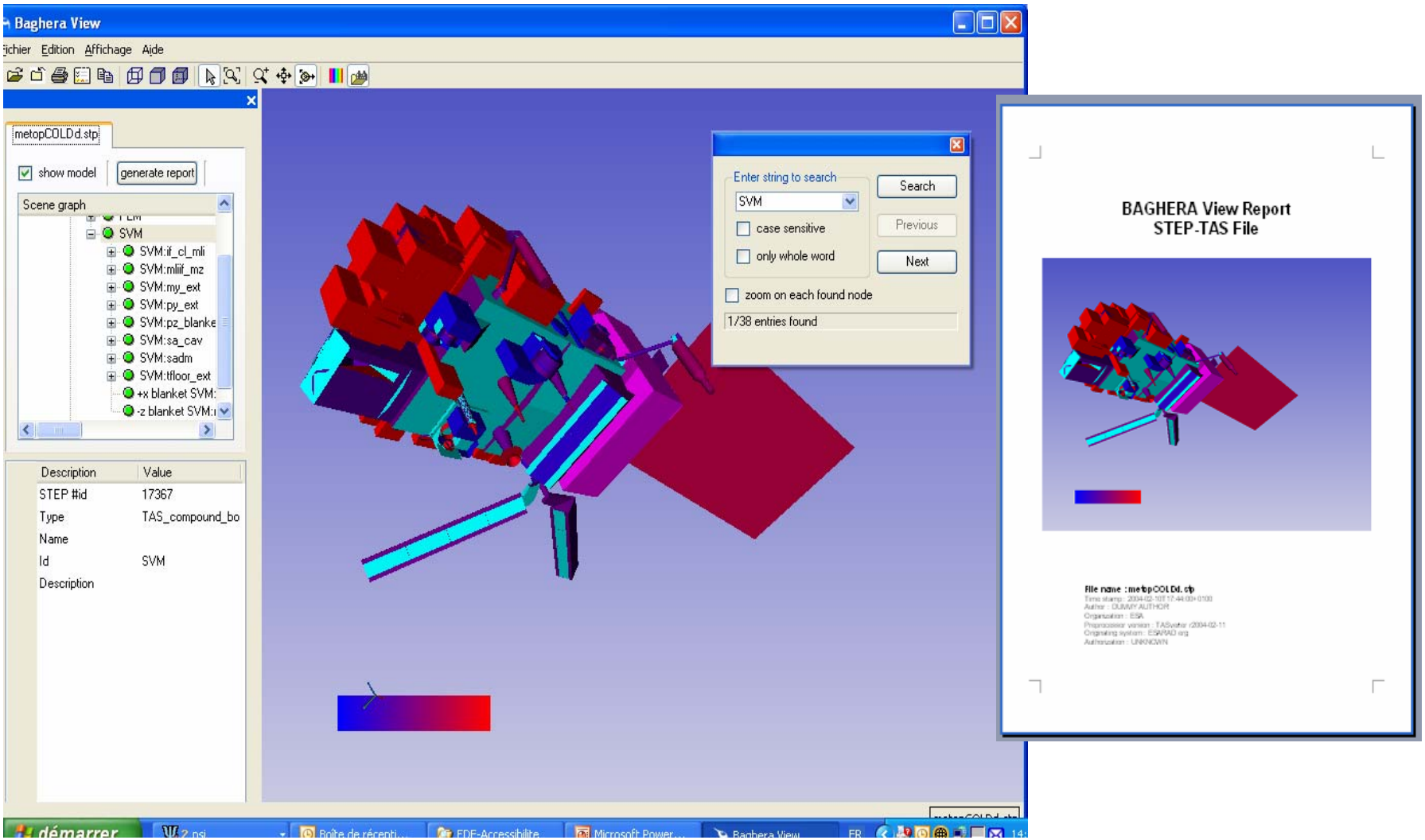
Ambition of Baghera View

- To become the Reference STEP Viewer for the Space Industry
- To be used by sender and receiver of the data, for :
  - Checking 3D geometry
  - Checking assemblies and properties
  - Reporting the exchanged data

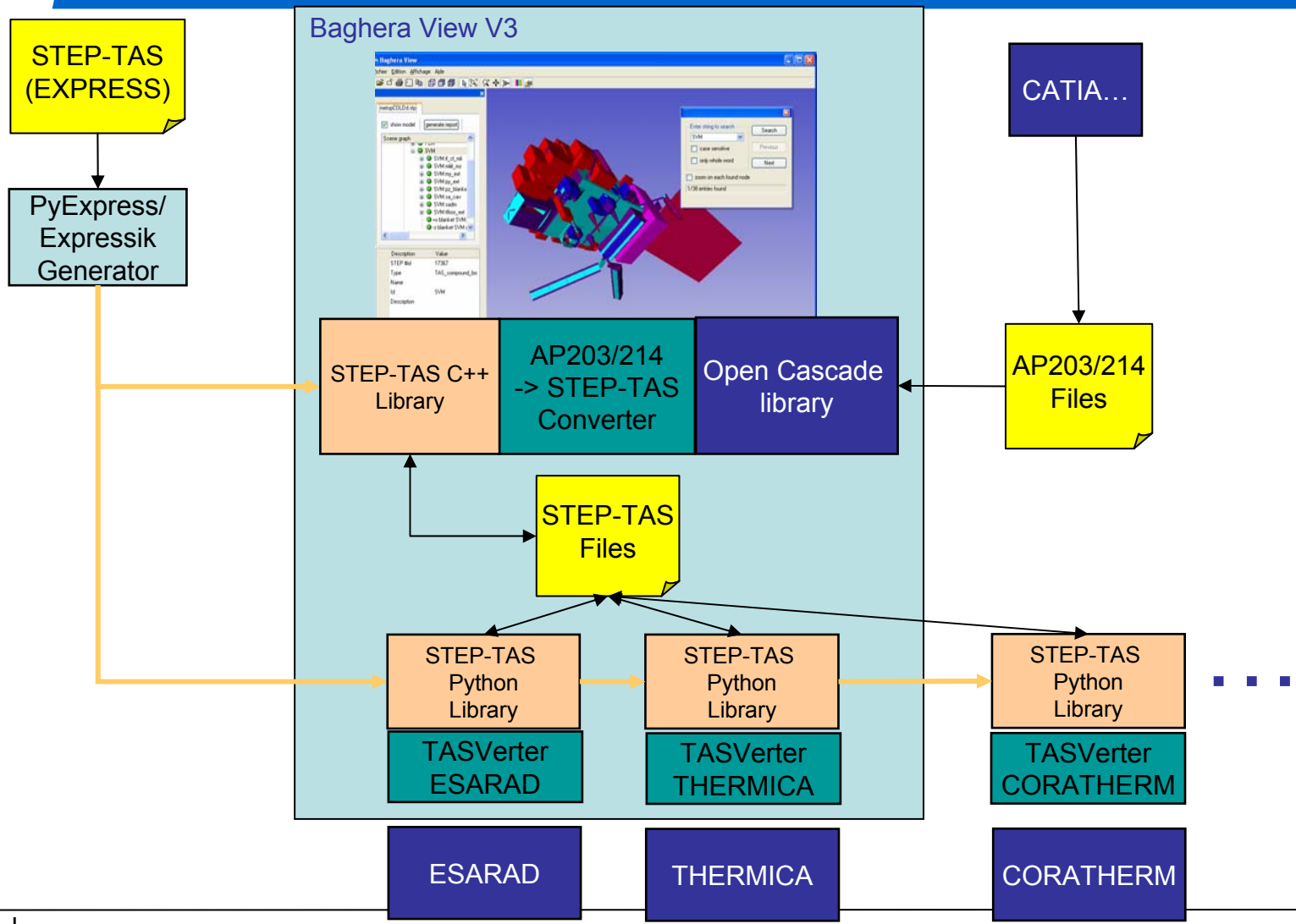
Current and new functions

- Loading / superposing several STEP models into one 3D session
  - STEP-TAS, AP203/214
  - Integration of TASverter (ESARAD, THERMICA)
- Integrated AP203 to STEP-TAS converter
- Browsing hierarchy, searching for elements
- 3 rendering modes : wire frame, solid, transparency
- Elements properties display
  - With table of colours
- Generating reports

Demonstration



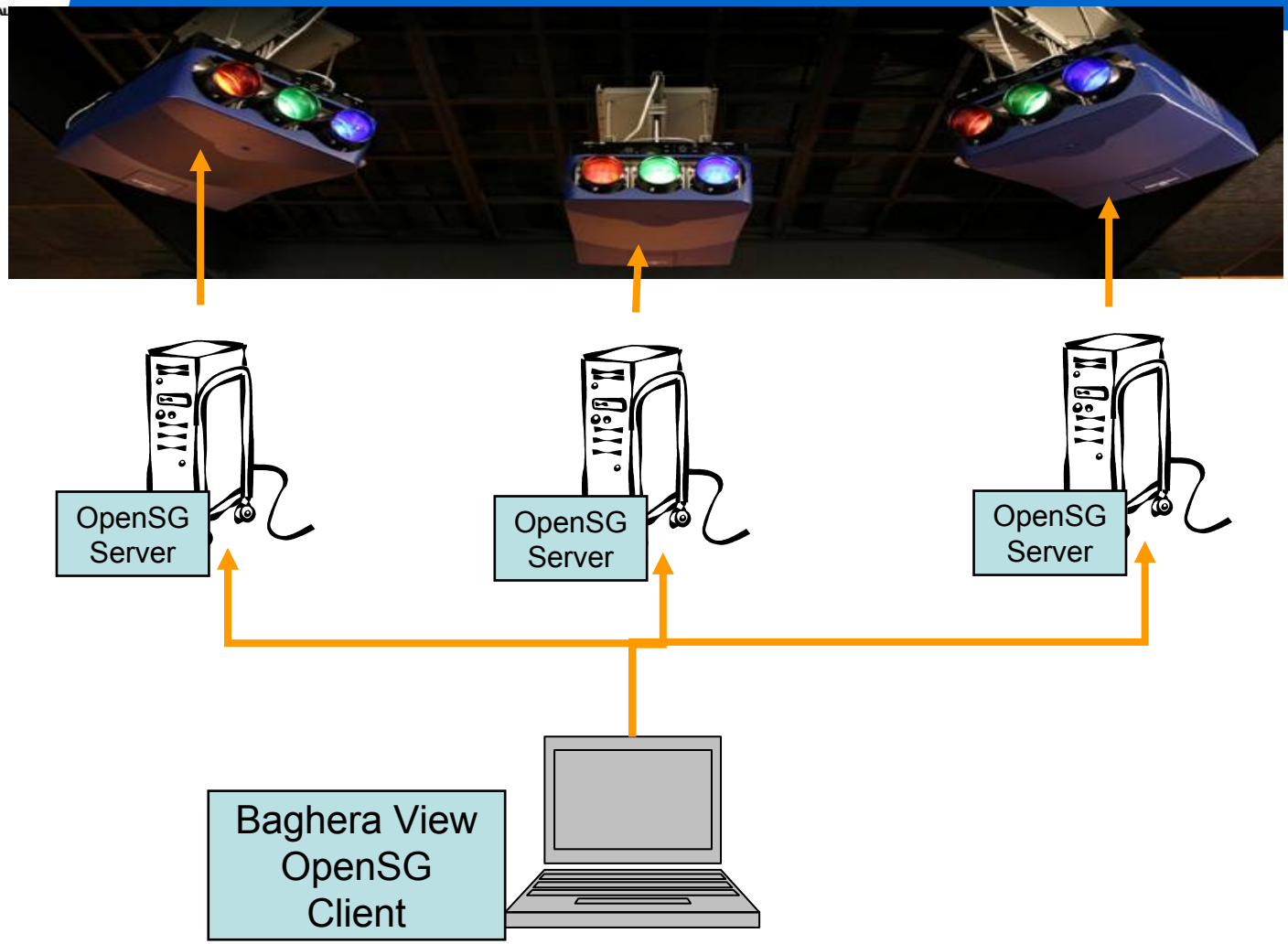
Summary : A new architecture



Technologies

- Kernel = CSTB EVE portable platform (Windows, Linux, UNIX)
- STEP-TAS V5 loading with PyEXPRESS/C++ library
  - To be replaced by expressik
- OpenSG for 3D graphical display using independent OpenGL layers
  - Allows clustering (see Immersion Room)
- AP203/214 loading with OpenCascade 5
- Report generation in Word/RTF format + XML
- Portable GUI with QT

Baghera View in Immersion Room



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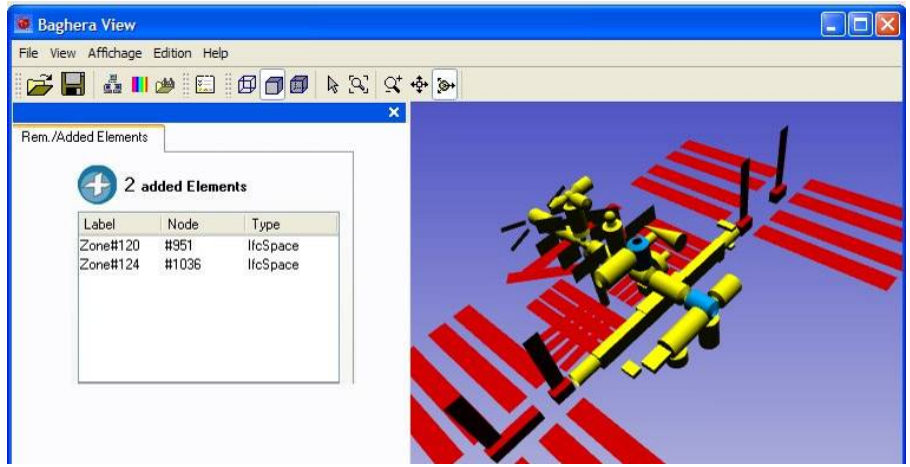
Using Semantic Comparison and Reporting of TAS models

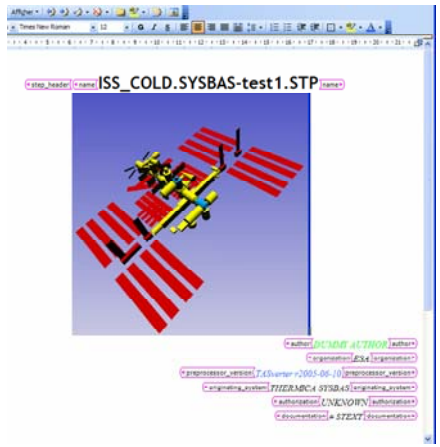
Application with Baghera View

Current Work with *Baghera View*

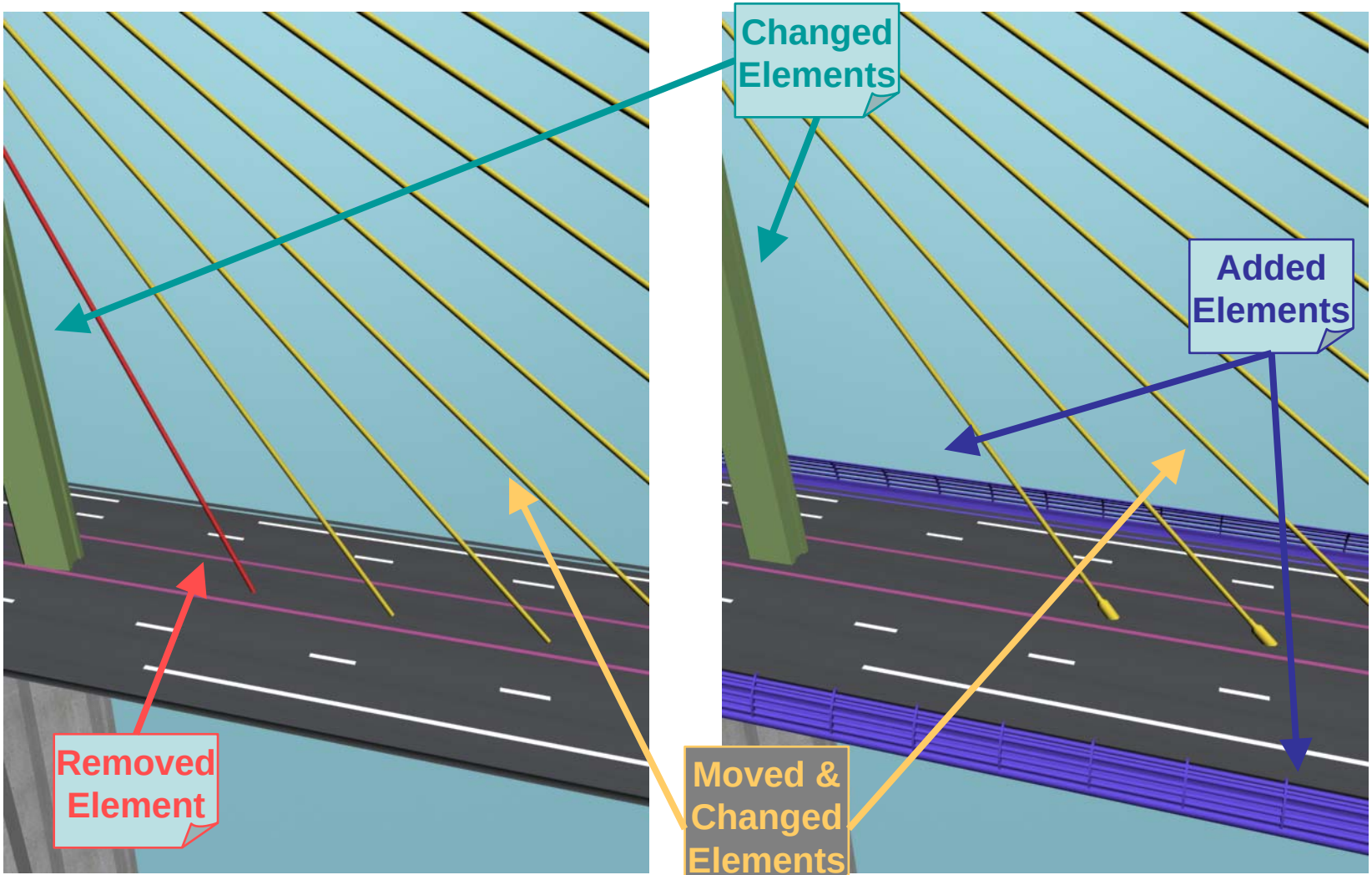
- Comparison of TAS product models
  - Using Expressik parser



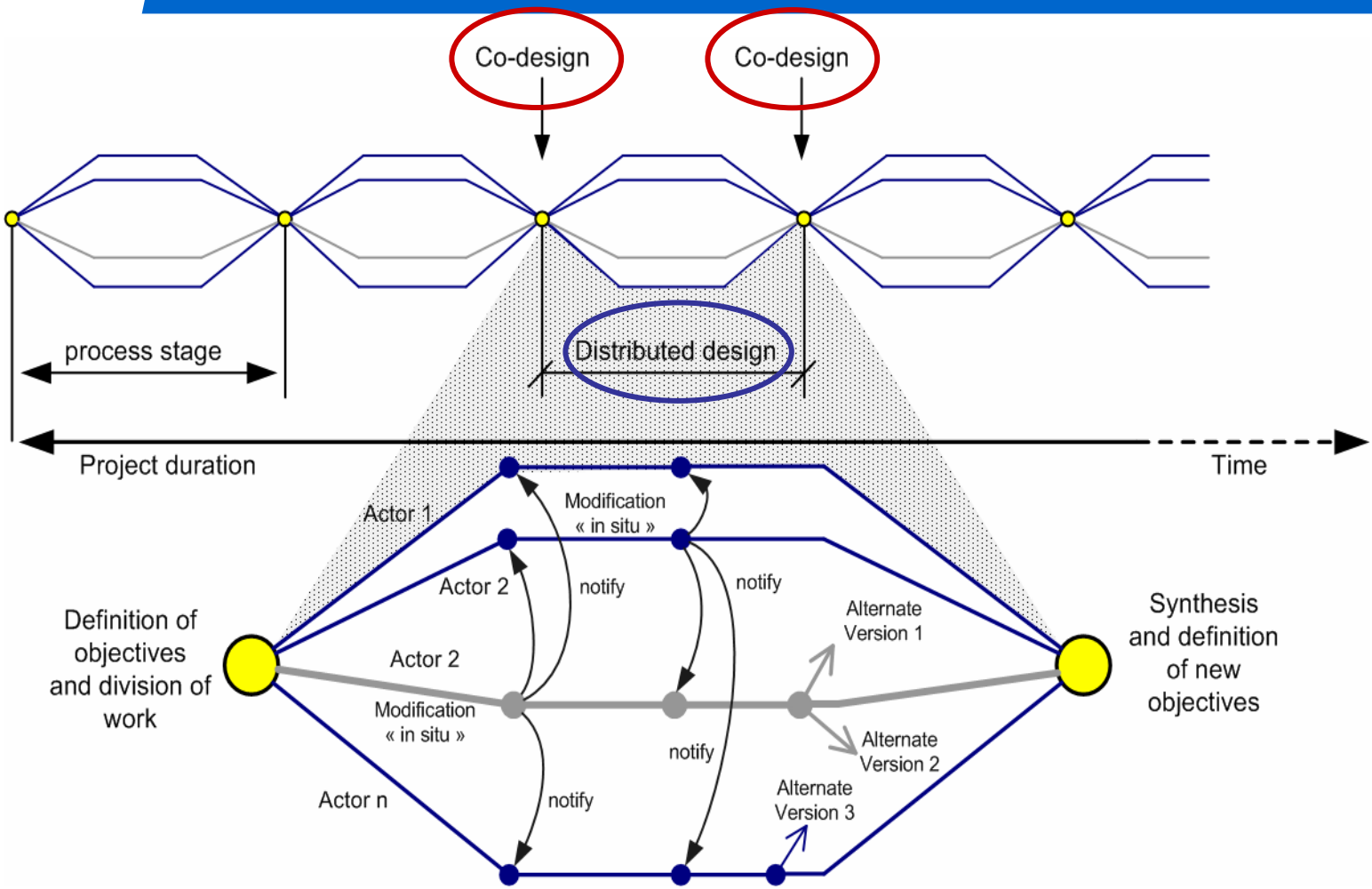
- Tas-Arm report generation
  - Automatic Update with *Word 2003*



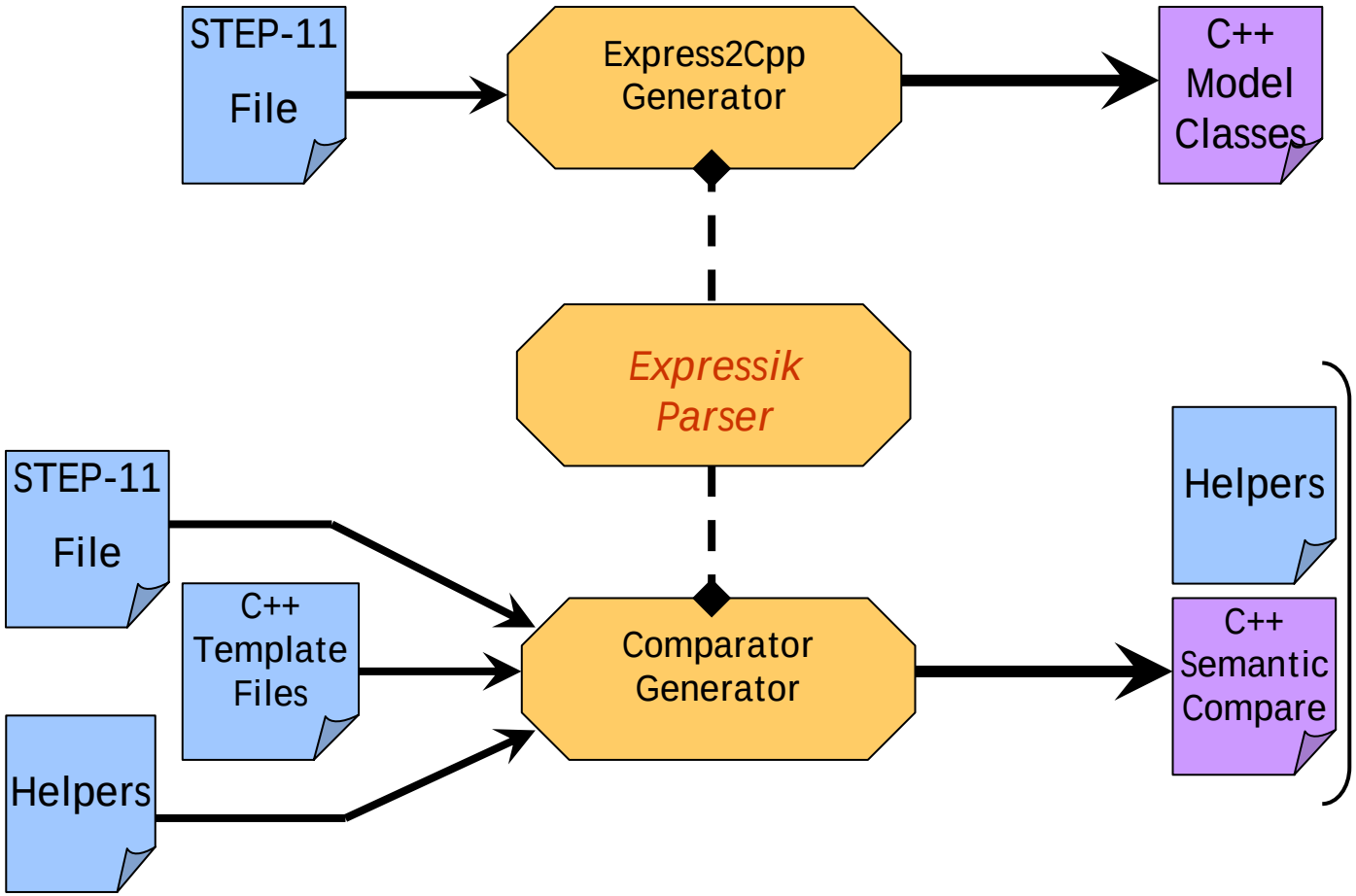
Aim of Semantic Comparison



Why do we need semantic comparison ?
Design Process (Hanser, 2003)



Semantic comparison of product models Implementation

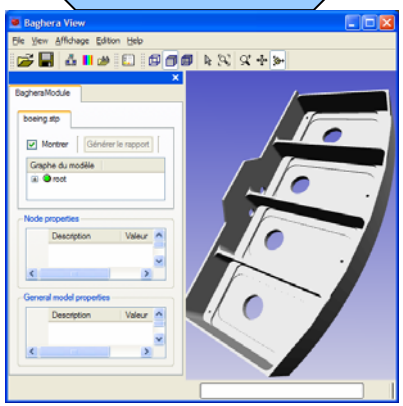


Report of TAS models

TAS Model v1.0 *STEP-21*

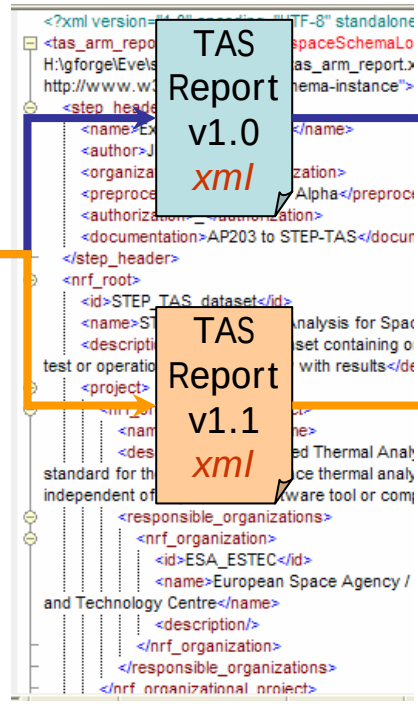
TAS Model v1.1 *STEP-21*

Baghera View



TAS Report v1.0 *xml*

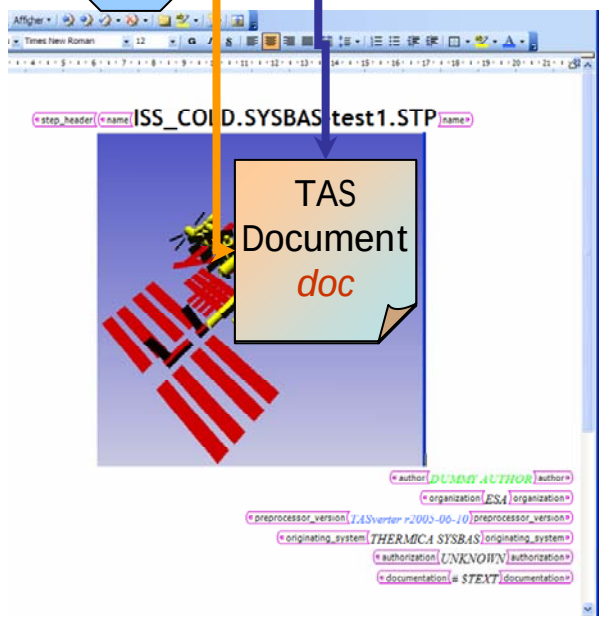
TAS Report v1.1 *xml*



Word 2003

VBA

TAS Document *doc*



Baghera View « children » in the construction sector

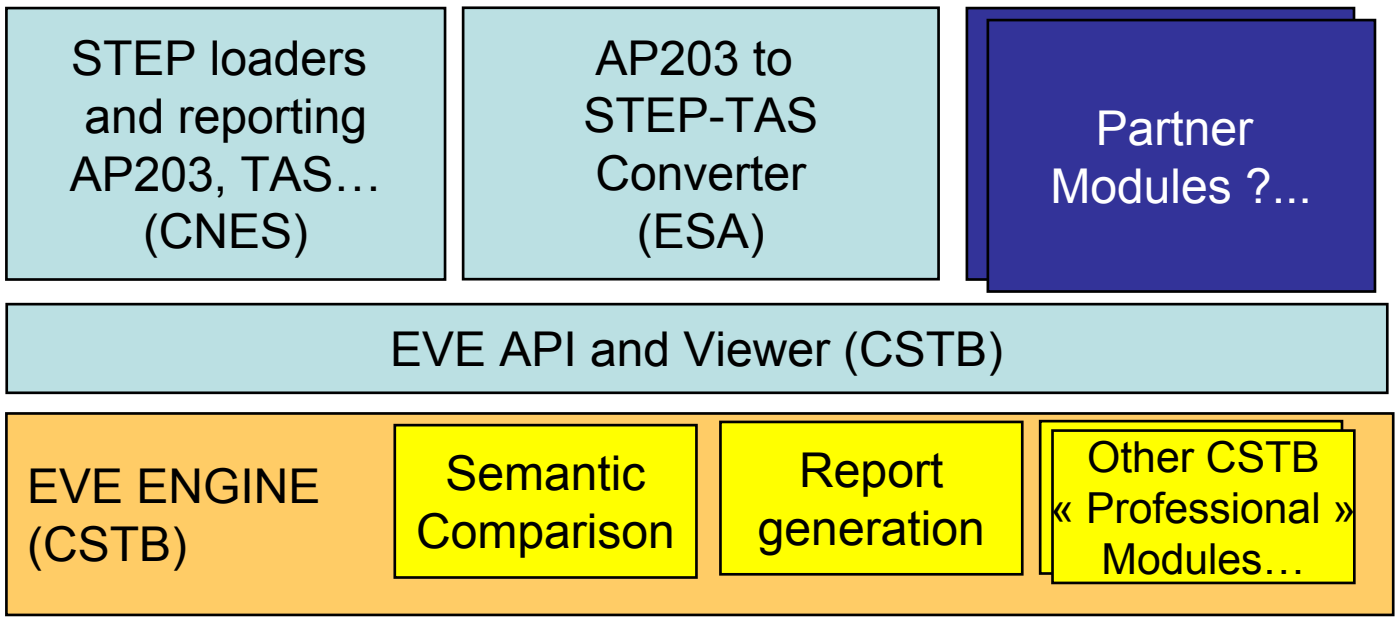
- IFC Viewer
  - Checking IFC for exchange in public markets
  - Post-processing and reporting functions for in-house simulation tools (structural analysis, thermal…)
  - Feeding new digital cities
  - Partners : BOUYGUES, VINCI, EIFFAGE, SETRA, French Ministries (Housing, Equipment)…

- HOMES Project with Schneider
  - One of the 5 major French research project of National Innovation Agency (announced by J. Chirac)
  - Energy saving
  - Integration of electrical definition into buildings (wiring, devices…)
  - Optimization of building energy saving (integration with thermal analysis)

Status

- Baghera View is developed under CNES contract
- CNES agrees for free distribution of Baghera View in Europe
- Distribution outside Europe needs to be discussed/formalized

Modular Architecture of Baghera View



Completely based on Open Source Solutions

Proposed extensions

- Detailed STEP files analysis (rules checking…)
  - Required for files not generated by TAS Verter
- Enhanced GUI
  - web meeting/remote display capabilities
- Upgrade to be compliant with future TAS Verters
  - Orbitography, kinematic, missions related data…
- New scope :
  - STEP-NRF (results of analysis, ESATAN…)
  - STEP-SPE (ESABASE…)
  - AP209, AP210/212, AP233 (sponsors are welcome)
- Other ideas ?

Thank you for your attention

- Download Baghera View at :
  - http://salle-immersive.cstb.fr/en/
  - Item: Download
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