SDM-A: USER CONF PHX

ANALYSIS LIBRARY DEPLOYED IN STELIA.
Project: Stress Data Management for Aerostructures

STELIA

User Conference

I. STELIA
II. Why Manage our Stress Data ?
III. The Choosing of PHOENIX-Integration
IV. STELIA's Integration Software Development Kit (SDK)
V. Using STELIA's Interface
VI. Project Challenges
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    a) Integration of Windows tools
    b) Dependency Tree View
    c) Reporting

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Our projets

SDM-A:

- Managing stress data.
  - Propose an environment for data management, stress-tool deployment, linking our DO's and exchanging data with our clients and suppliers.

- STAG:
  - Stress methods and tools development
    - Generic STELIA tools.

- FAST:
  - Research Project
    - Propose new structural topologies
    - Reduce the cycle of design to manufacture

STELIA Future stress environment

¤ Context
¤ Versioning
¤ Applicability

PLM AEROLIA

Projet link
CAO-STRESS
¤ Data exchange

Stress Data Management

PHOENIX INTEGRATION AnalysisLibrary

¤ Master multi-platform data
¤ Manage data configuration for clients and internal (Extended Enterprise)
¤ Visualise calculation results without the need to open the original tool

Reporting

Process Sequence

PHOENIX INTEGRATION ModelCenter

¤ Creation of multi-platform processes
¤ Diffusion of « non modifiable » processes
¤ Optimisation of process library

STAG

Altair HyperWorks
HyperMesh
HyperView

¤ FEM Pre / Post-treatment
¤ Customisation possible

¤ Multi-platform Linux/Windows
¤ Multi Solver (acc. client. Eg: NASTRAN, ABAQUS, OPTIMUS)

python

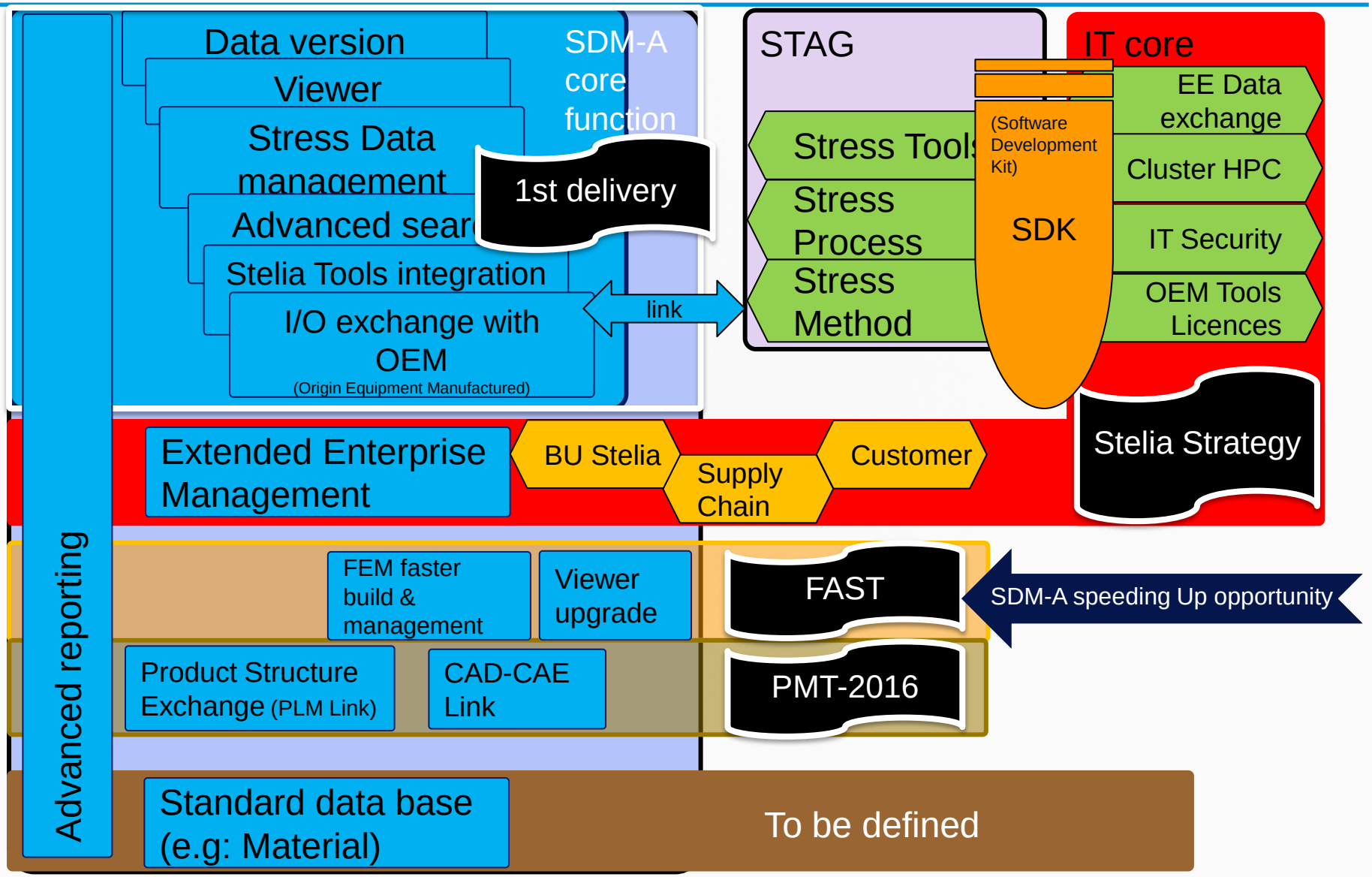
¤ Post-treatment GFEM / IGFEM / DFEM batch tools
¤ Optimisation
¤ Multiple load cases
¤ Multi-platform Linux/Windows
¤ Possibility to use HPC for large scale calculation or PC for smaller calculations.

¤ Formatting
¤ RF Calculation
¤ Results compliation
¤ dll (VB) for sensitive code: PI or performance
¤ VBA for general tools

SIMULIA
ABAQUS
SAMCEF
OPTISTRUCT
MSC Nastran

Solvers on HPC
¤ NASTRAN / ABAQUS / OPTISTRUCT / SAMCEF…
¤ Capacity HPC

Project parameters



WHY MANAGE OUR STRESS DATA ?

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RELIABILITY. PERFORMANCE.

Why Manage our Stress Data ?

Data Management allows us to:

- Protect data by :
  - Duplication
  - Global IT security process
  - Traceability (logging actions)
- Deploy methods and tools to all users simultaneously
- Pilot task progress at different levels using reporting tools
- Capitalise on good practices by analysing the various calculation processes and workflows used, thanks to traceability.
- Deliver complete and verified packages to our clients.
- Trace technical and contractual evolutions using meta-data and document association.
- Control the procedures and workflows employed by our suppliers and maintain technical expertise within the company :
  - STELIA can define and implement specific and innovative solutions
  - Suppliers are obliged to use the workflows methods and tools deployed by STELIA.

THE CHOICE OF PHOENIX-INTEGRATION

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The Choice of PHOENIX-Integration.

- The technical / commercial proposal of PHOENIX provides :
  - An evolution of the range of tools linked to the evolution of our company
  - The time necessary to master a subject before going to production.
  - Costs adapted to the use of running processes in batch mode.
  - An editor listening to our company's needs both technical and commercial

STELIA INTEGRATION SDK

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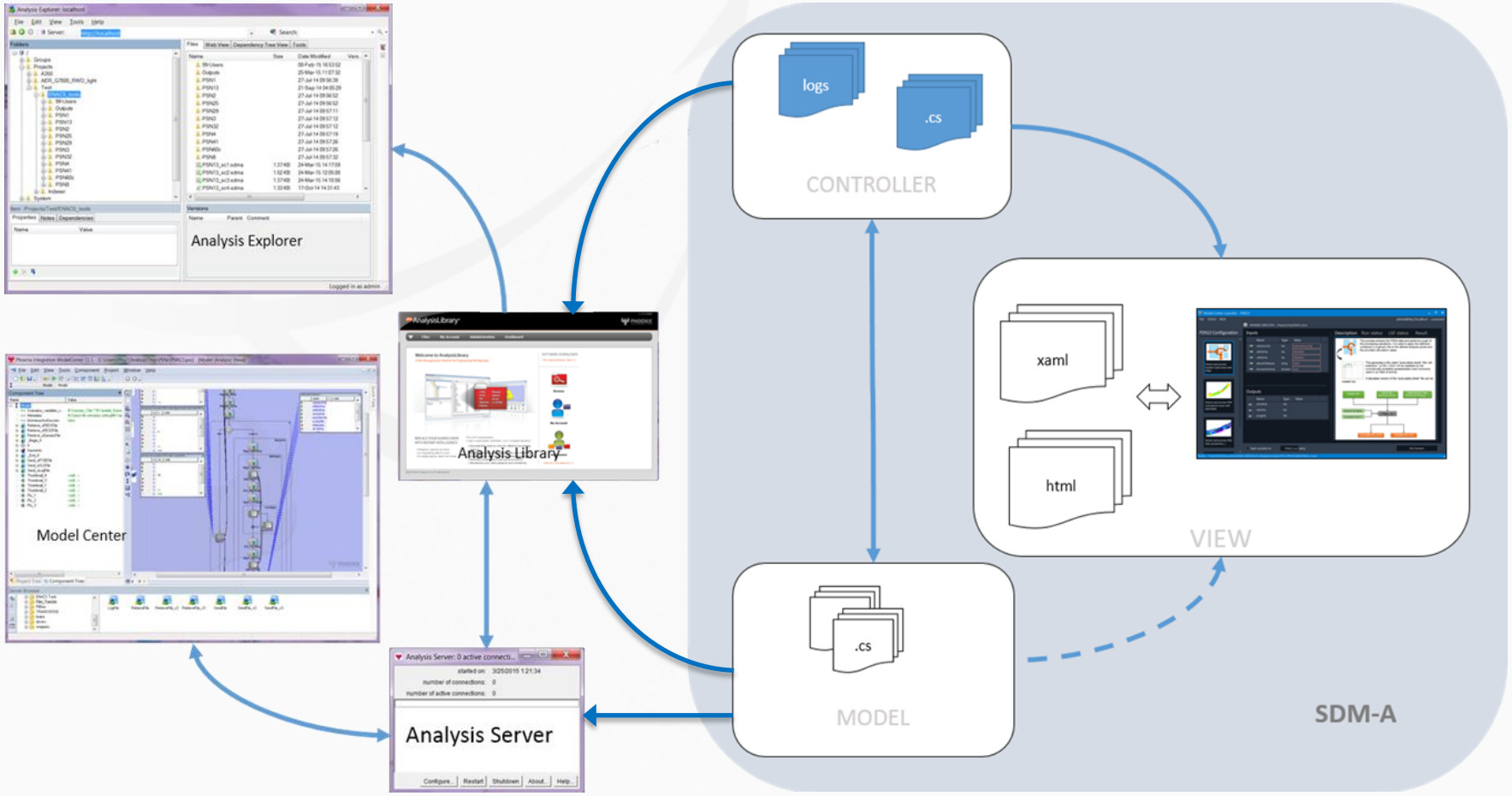
STELIA Integration SDK

PHOENIX team has created a method of integration for STELIA comprising :

a. A specific GUI (Graphic User Interface)
b. A method of integrating external tools (client or commercial)
c. Functional test initiation for batch mode operation

STELIA Integration SDK

General Project Architecture:

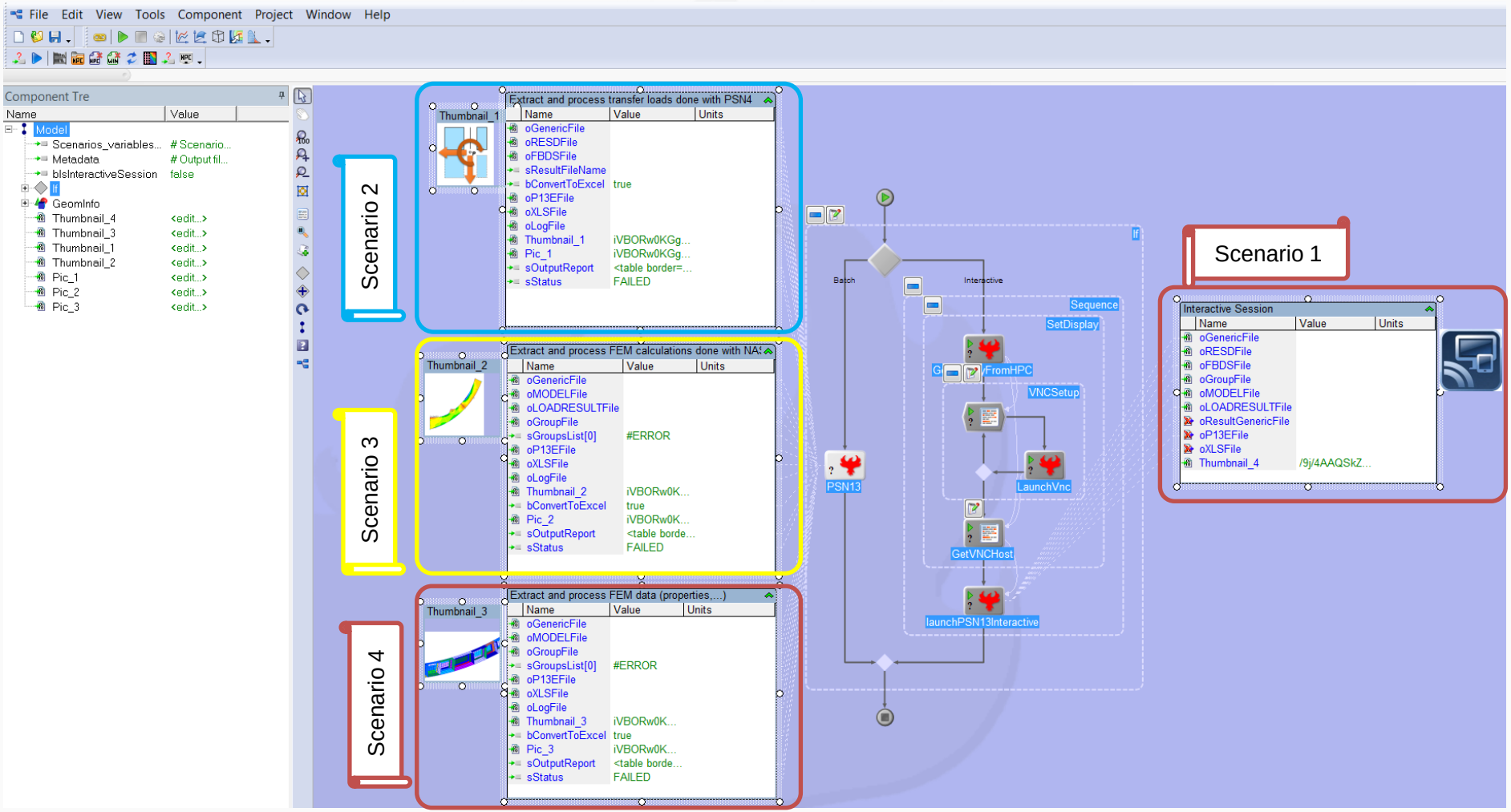


PHX's Tools

STELIA Customisation

STELIA Integration SDK

General Projet Architecture :



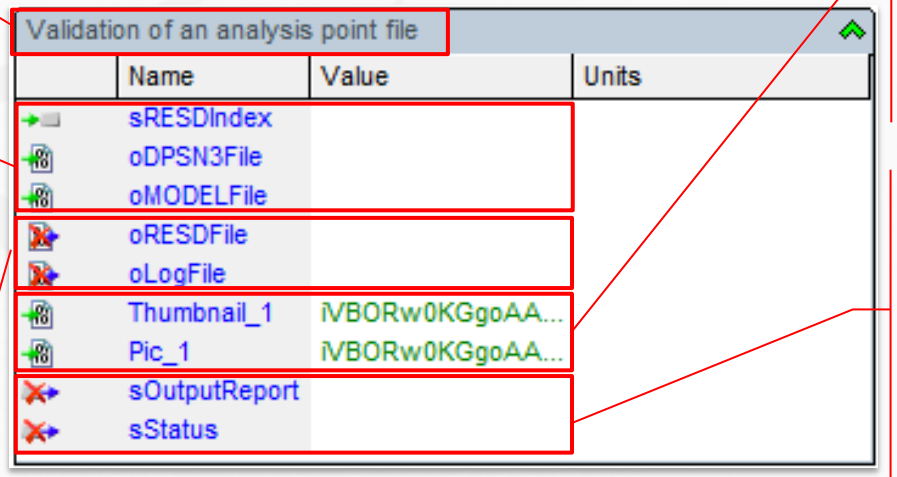
STELIA Integration SDK

Data are read by the graphic interface depending on functionality :
"Data Monitor" button of Model Center

Scenario title

Input variables which are displayed in the UI and edited by the user

Output variables which are displayed in the UI and stored (file type only) in AL at the end of the execution



- "**Thumbnail_#"** → thumbnail displayed in the UI for this scenario
- "**Pic_#"** → picture displayed in the UI "Description" tab for this scenario

- "**sOutputReport**" → output string variable which contains a html formatted string displayed in the "Result" tab of the UI.
- "**sStatus**" → output string variable which contains the final status of the scenarios ("Success", "Failed") displayed by the UI at the end of the execution.

USING THE STELIA INTERFACE

Using the STELIA Interface

Following the integration of the *outils.pxc* in the SDMA environment, tools are used as follows:

a) Open the client data base. Authentication is required

b) Navigate to the required project

c) Go to the directory where you wish to work

d) Activate the TOOLS worksheet

   1. Identify a tool
   2. Choose a scenario
   3. Select the input data
   4. Define the output file
   5. Launch the application

e) Close the tool window

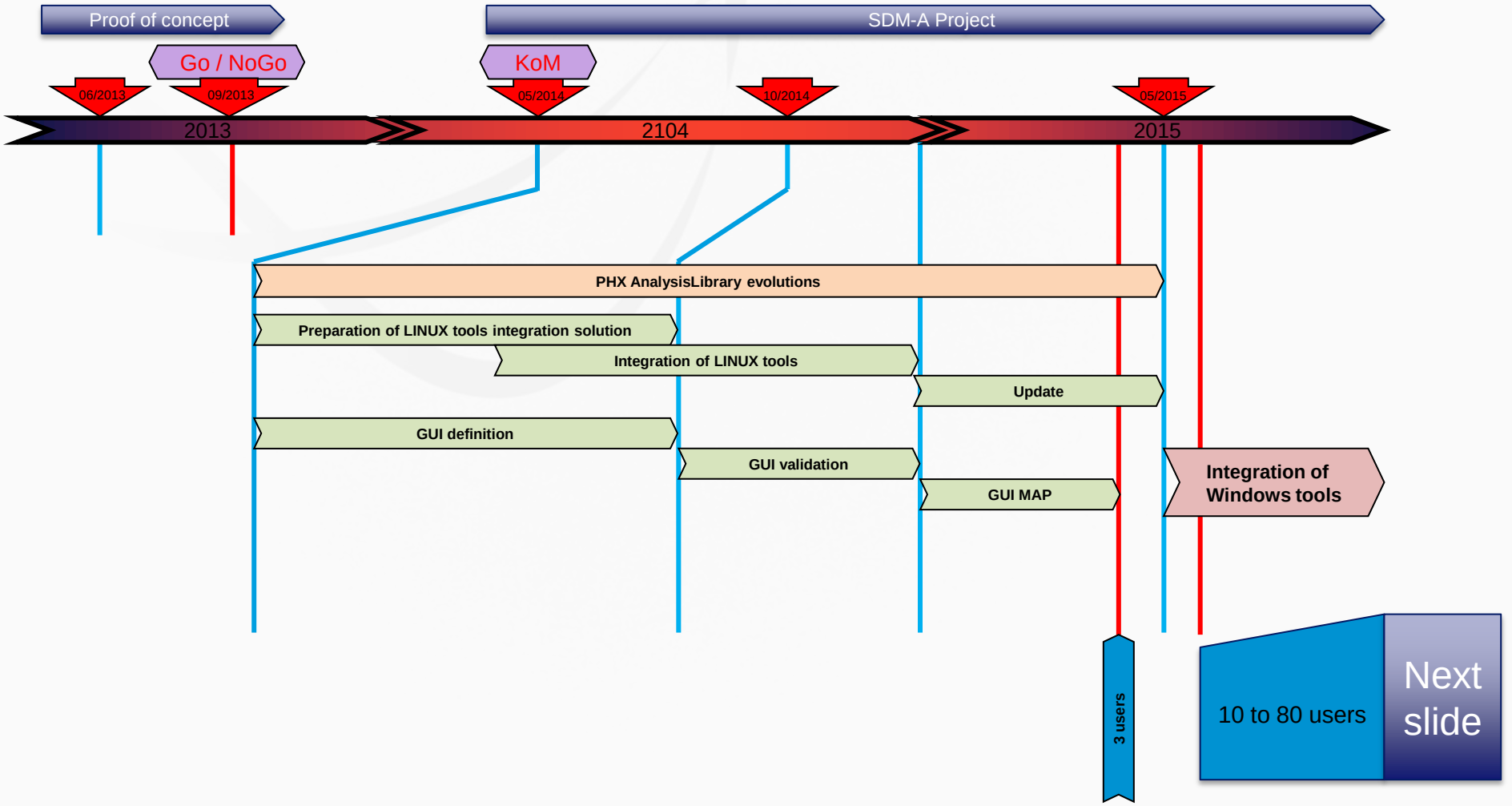
f) Verify the results

STELIA Integration SDK

Video

Project roadmap

General Project Architecture :



Perspectives

- Integration of interactive 3rd Party tools. Eg: EXCEL, PATRAN, HYPERWORKS, etc.
- Integrate office tools Windows, Word, Notepad, etc.
- Create a WEB based reporting function.
- Improve the Dependency Tree View in order to :
  - Provide an alternative way to navigate through the data
  - Select coherent data for packaging to clients and suppliers (links, metadata)
- Allow users to open several interactive 3rd party tools simultaneously with the interface in order to meet our RC targets
  - Tools not associated to ModelCenter process control but subject nevertheless to the need for traceability
- Adapt the deployment rate of the interface as a function of a managed return on investment

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