Virtual Training Center based on eGLE eLearning Platform

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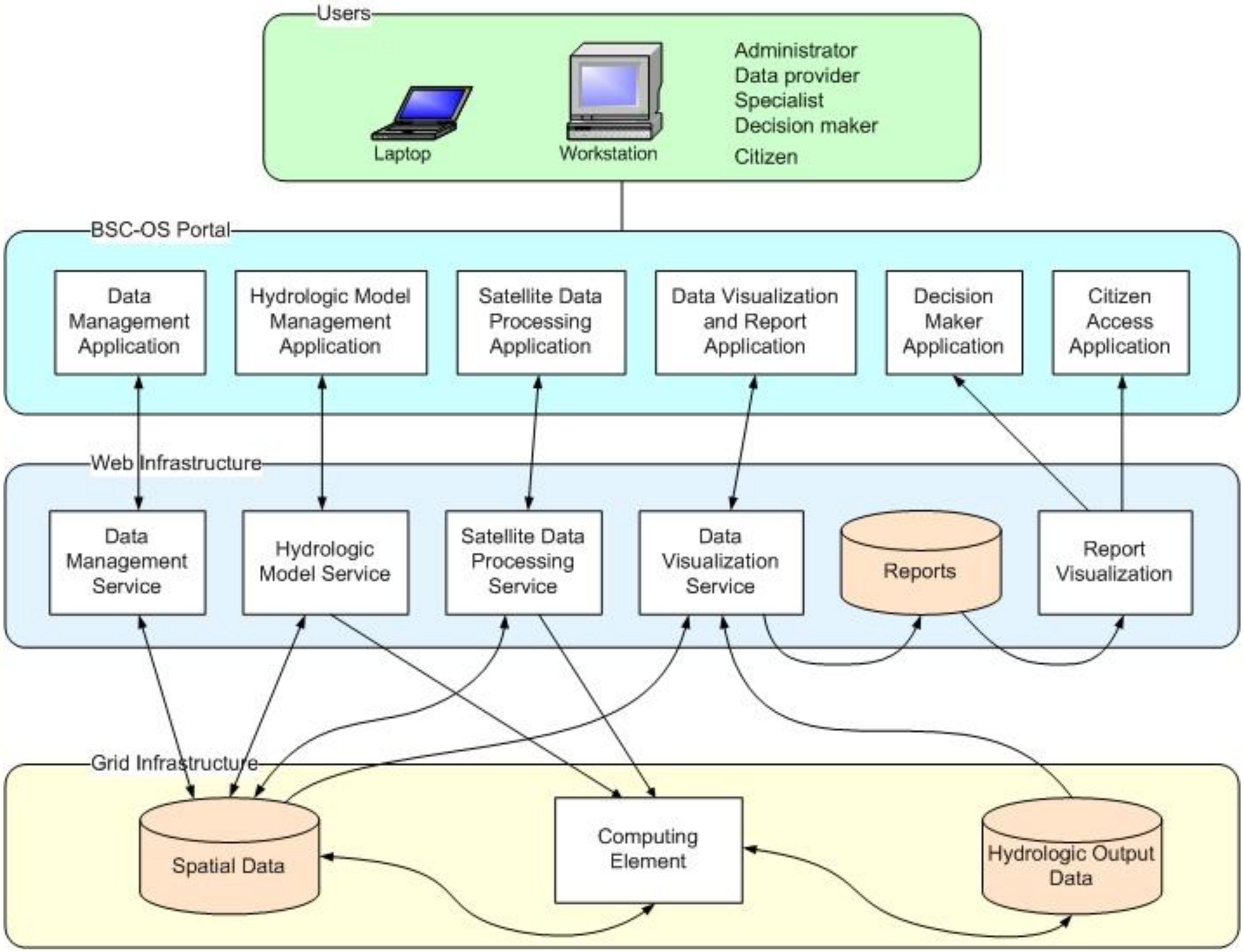
Outline

- enviroGRIDS portal architecture
- eGLE Platform
    - objectives, architecture, implementation scenario, functional levels, data and processing flow
- Lessons
    - visual structure, data types that can be included in eGLE lessons, lessons scenarios, execution (interactive scenario), examples
- Tools
    - pilot tools developed for eGLE, tool instantiation and interaction setup example
- Conclusions
- eGLE related projects
- Acknowledgements

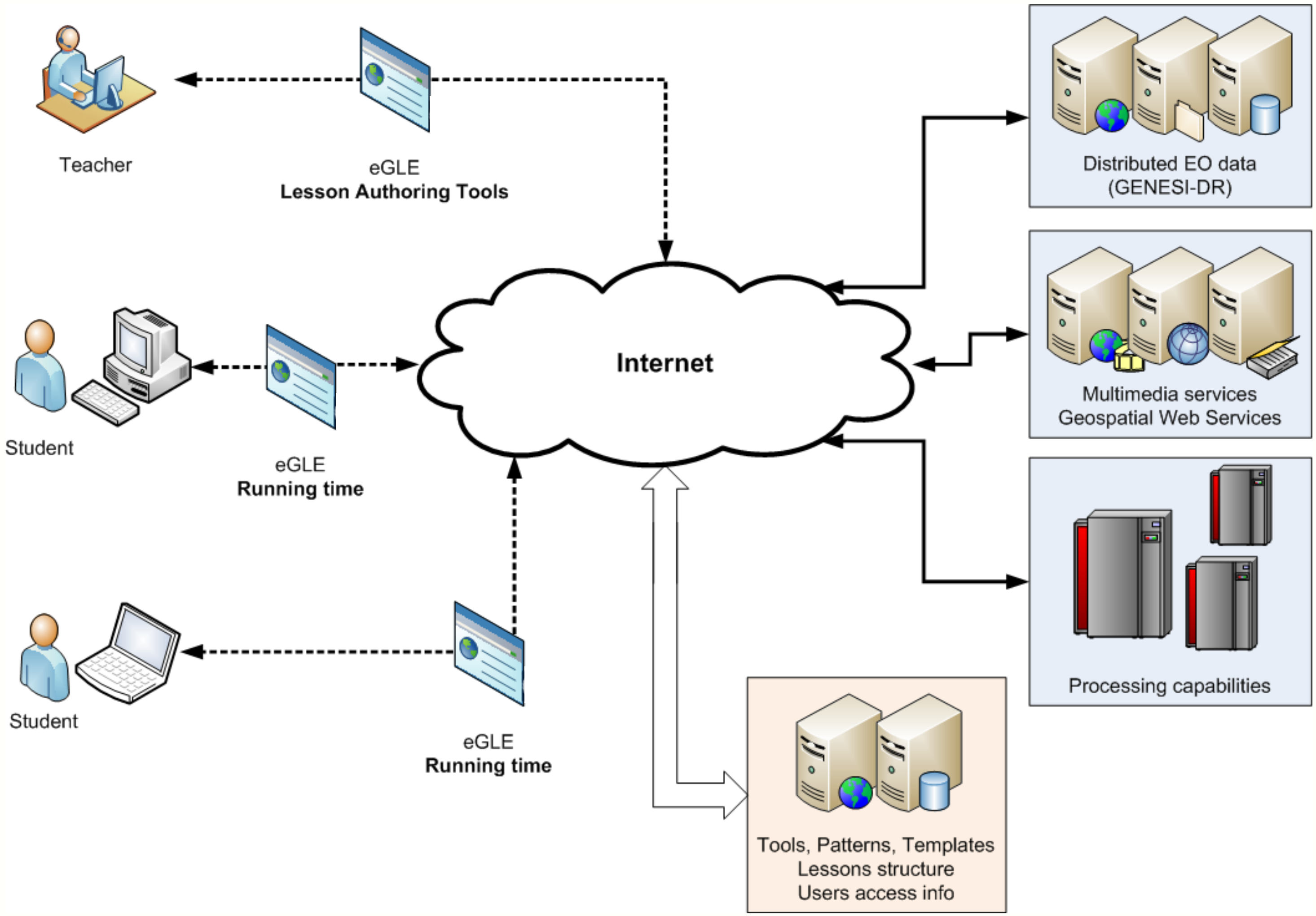
enviroGRIDS portal architecture



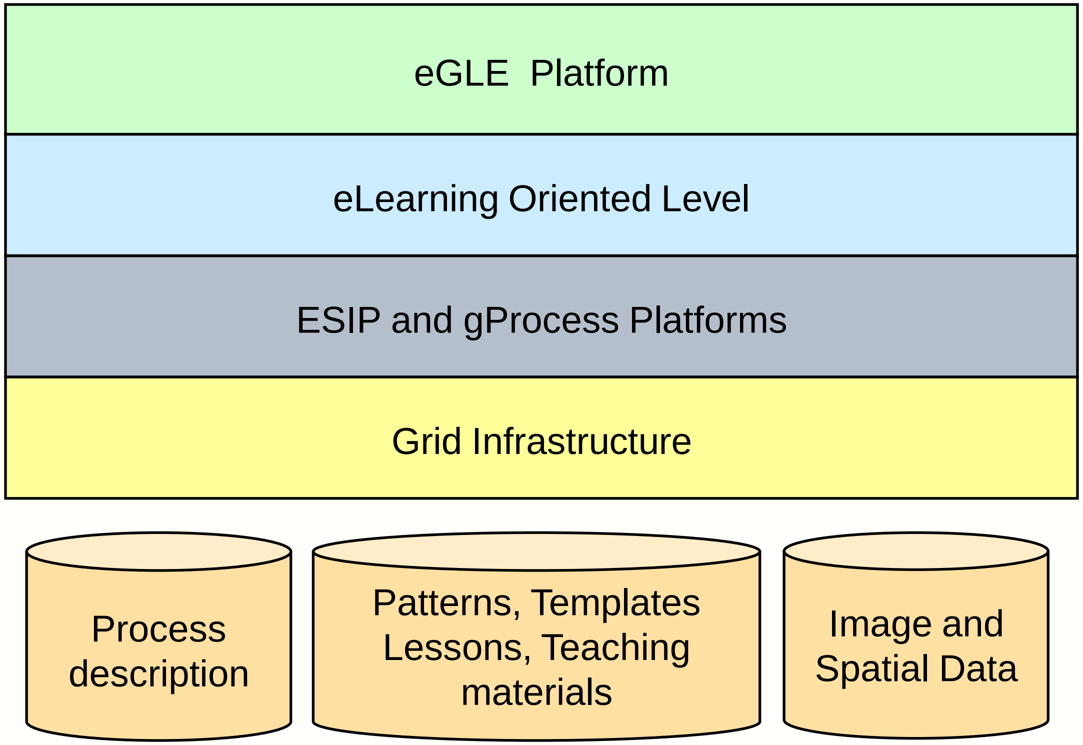
eGLE platform objectives

- Allow teachers with non-technical background to create and execute lessons for Earth Observation, based on GRID architecture
- Provide easy-to-use tools for data search and retrieval from remote repositories, data processing description, launch and monitoring over the GRID
- Allow different interaction levels with the students involved in the learning process:
  - modify the input data of a specific processing
  - describe and launch a new processing over the GRID
- Provide tools for online lessons development and visual data presentation

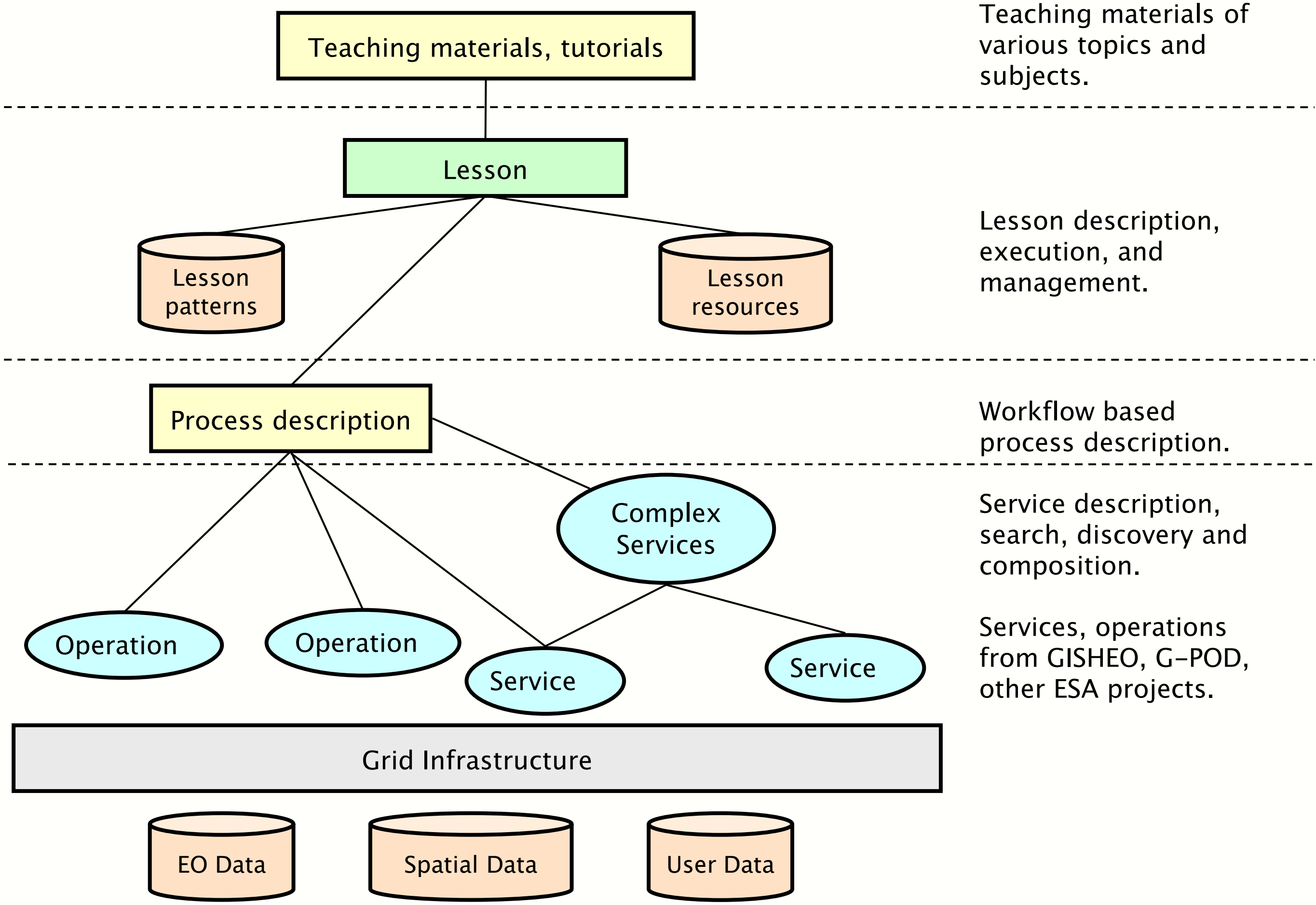
eGLE platform architecture



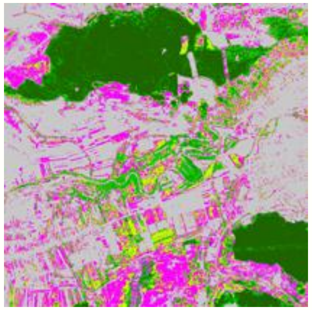
Functional levels in eGLE architecture



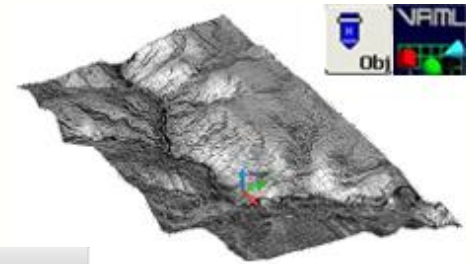
Data and processing flow



eGLE: lesson visual structure and data types

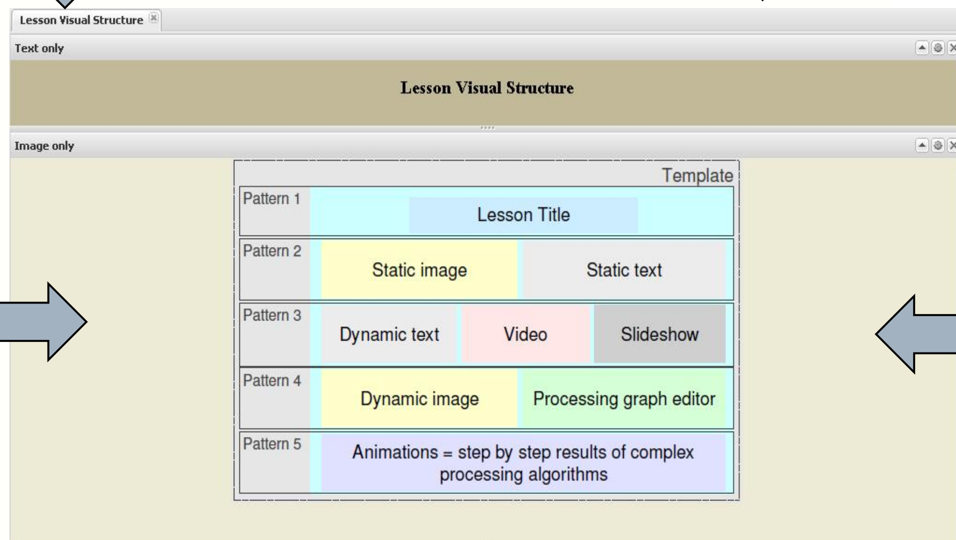


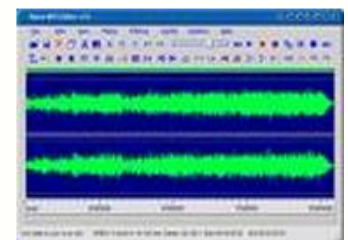
Images



3D Objects

Videos





Sounds

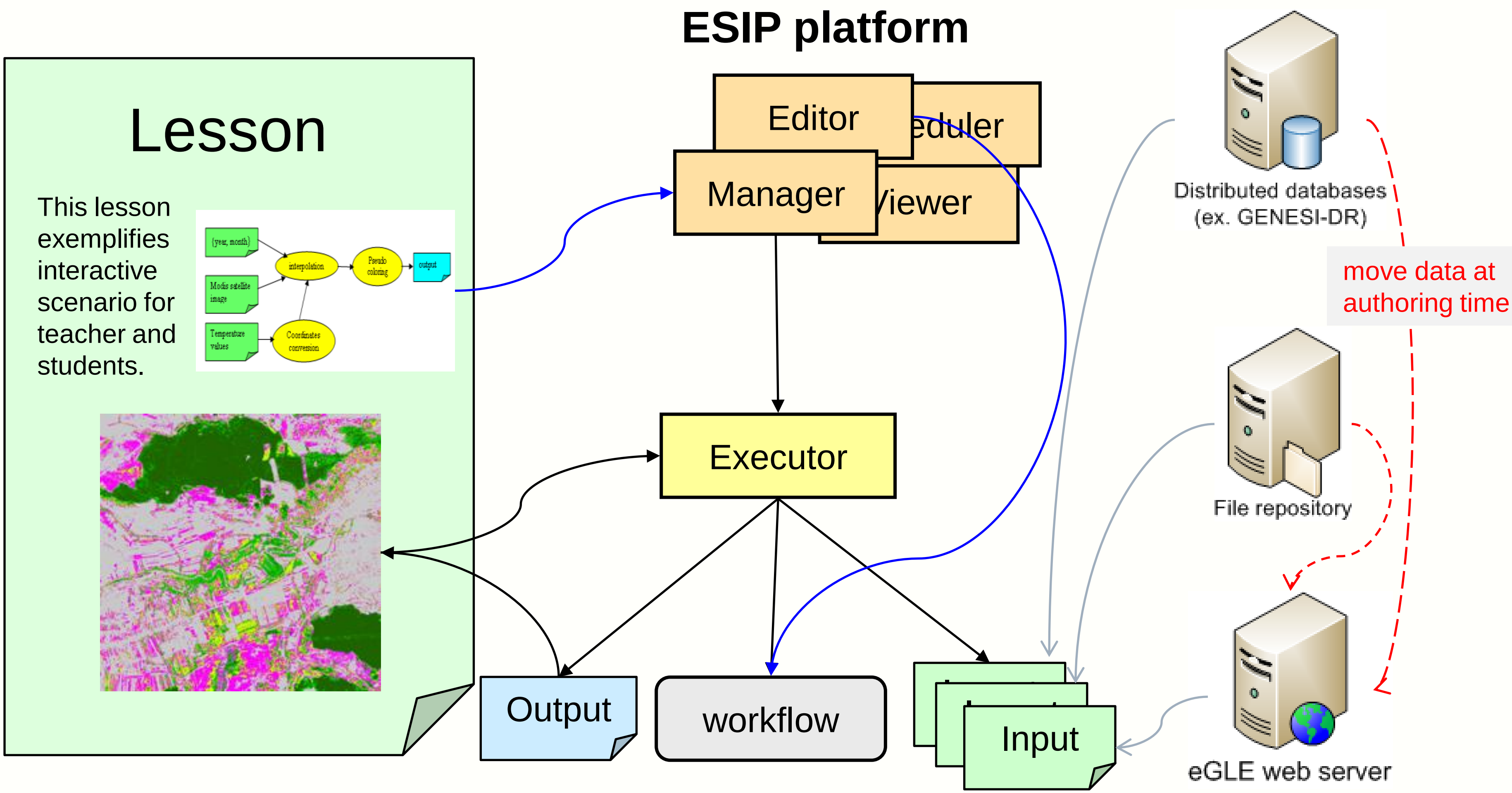
Documents

Other multimedia content

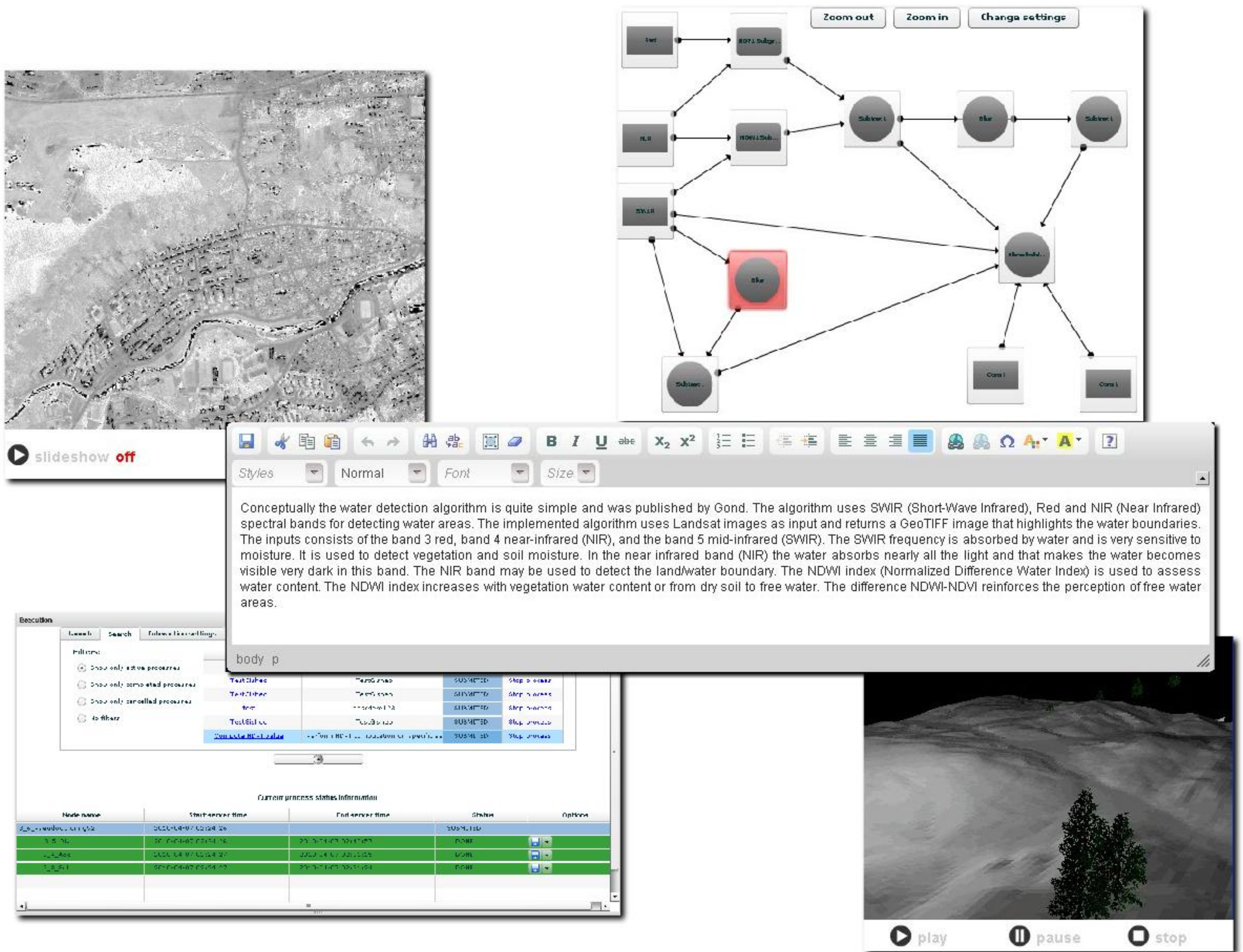
eGLE: lesson scenarios

- Static
  - All the content of the lesson is prepared in advance by the teacher, who can use its credentials to access protected information in different repositories
  - The text, images, videos and all other components are pre-processed on the grid at authoring time and the results are stored into the database
- Dynamic
  - The teacher describes a processing algorithm through a workflow using gProcess and grants to the students the ability to modify the workflow
  - At runtime the students have the possibility to change the workflow and to execute the modified version over the Grid network

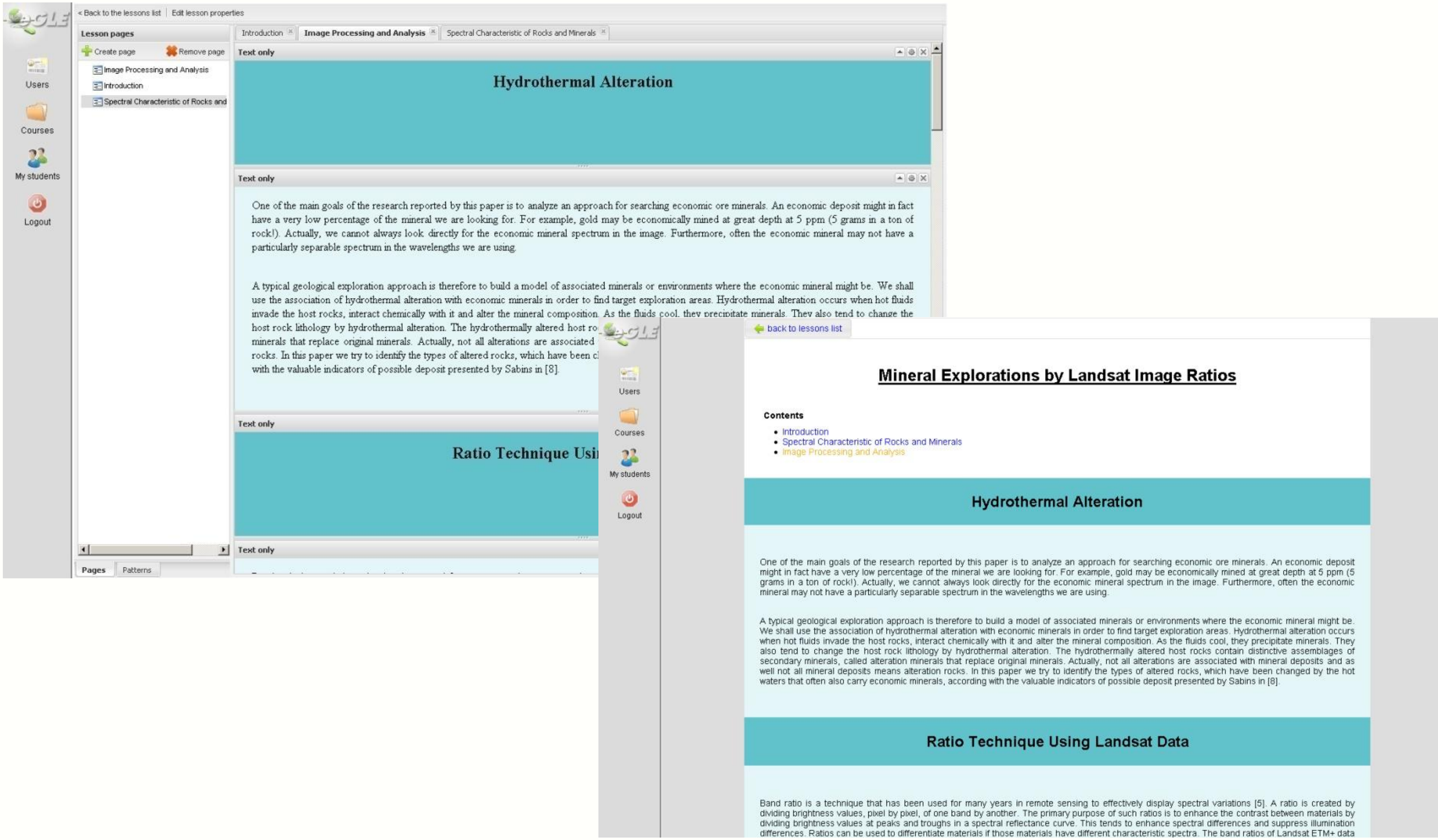
eGLE: lesson execution – interactive scenario



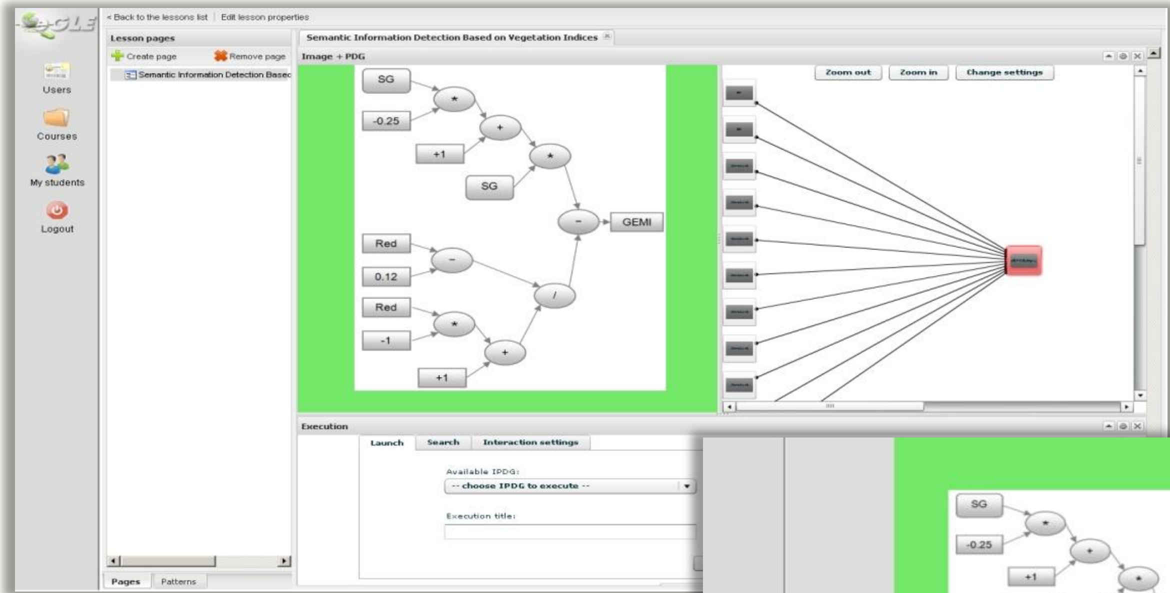
eGLE pilot tools



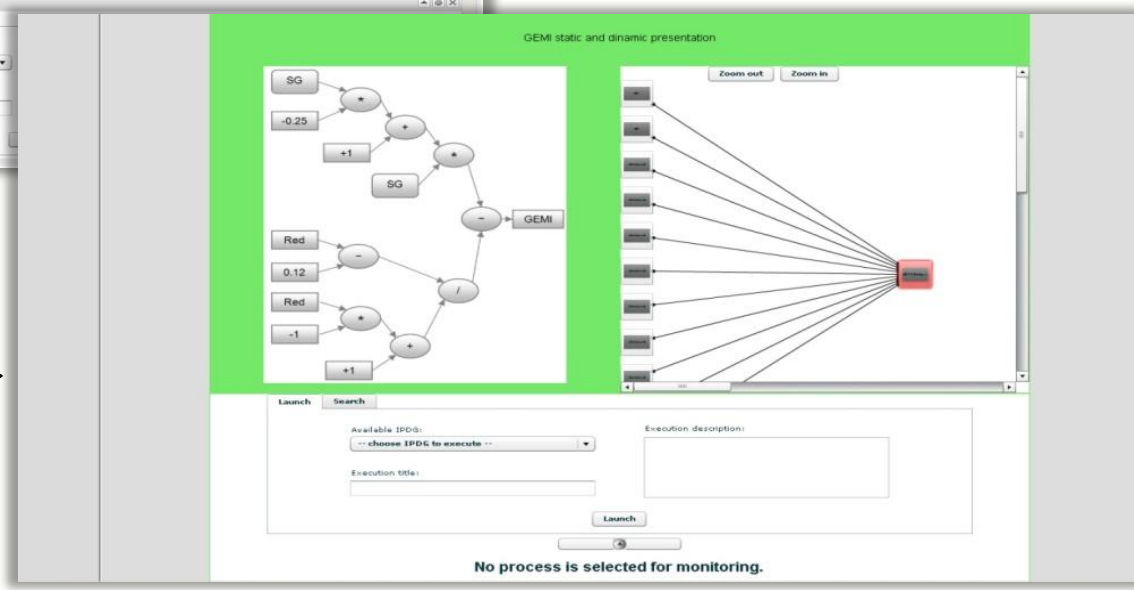
eGLE lessons samples



eGLE lessons samples

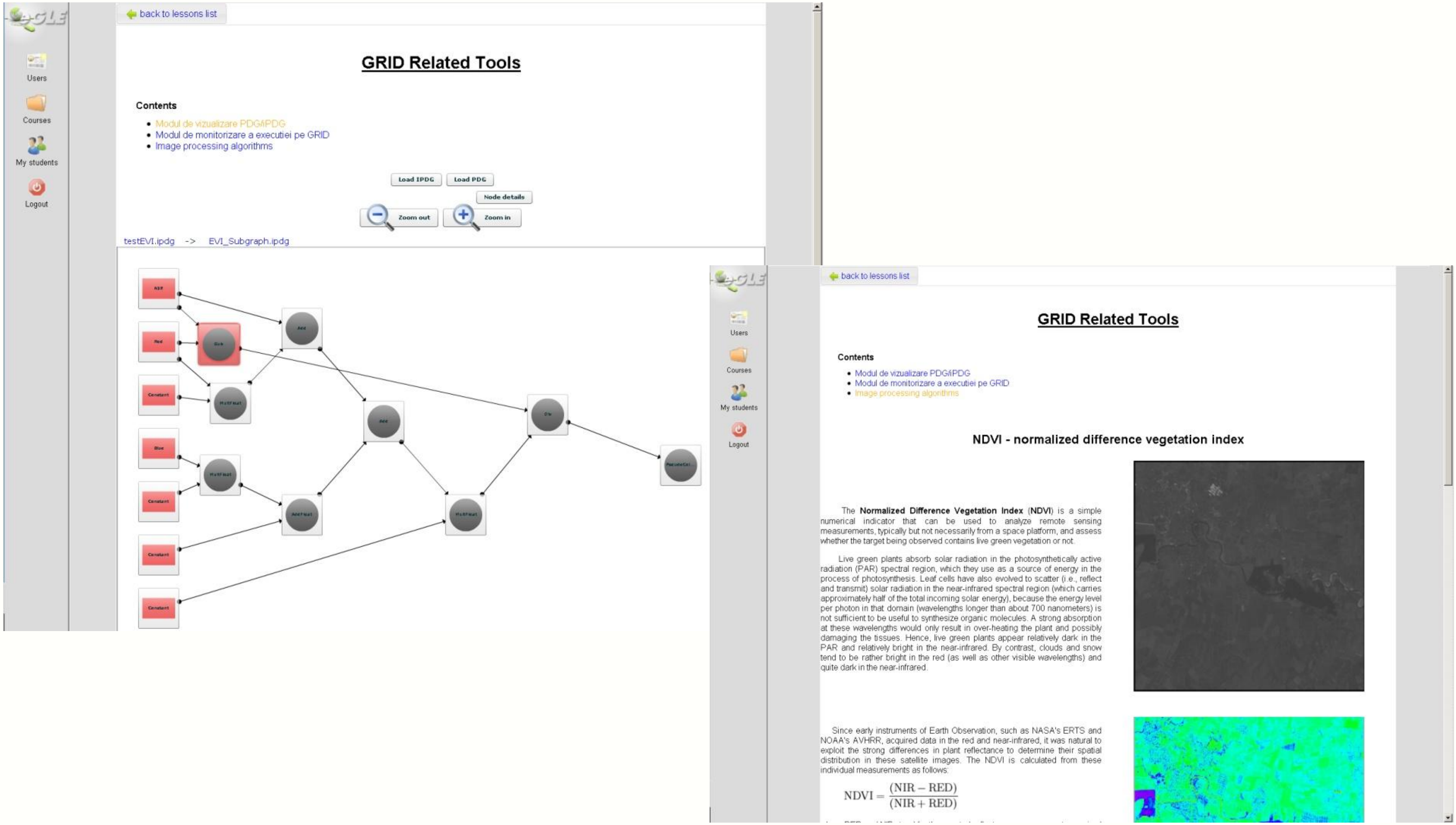


Runtime

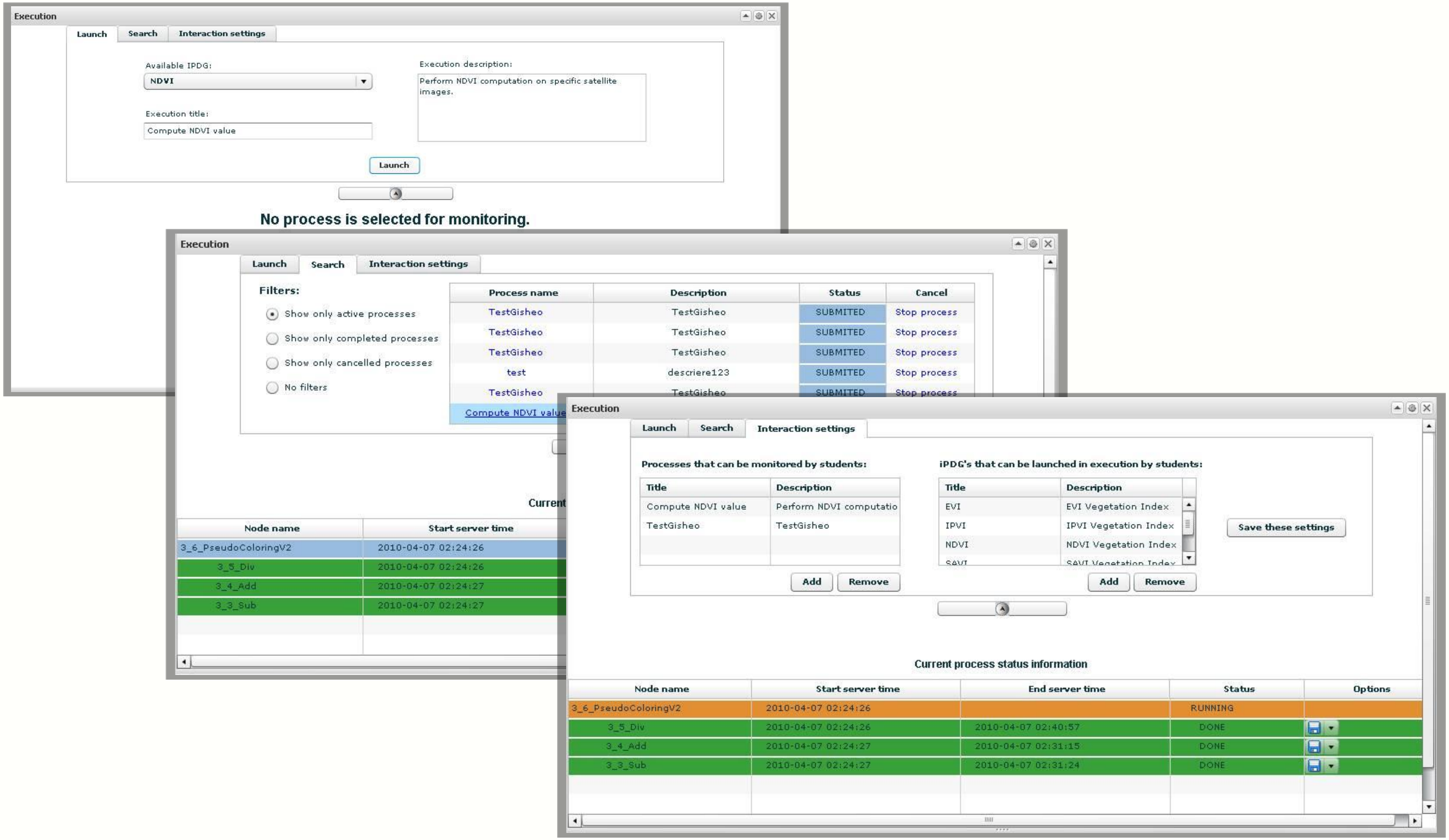


Authoring (WYSIWYG editor)

Lesson sample – GRID oriented tools



eGLE: Tools instantiation and student interaction setup



Conclusions

- Using eGLE platform the teachers are able to create complex lessons in EO domain without having knowledge on Grid technologies or distributed data repositories
- eGLE provides the development tools needed to create teaching materials in Earth Observation for schools, high schools, universities and companies, for training purposes
- Through its Tools, eGLE Application can incorporate the necessary functionalities for automated data search and retrieval from already existing distributed repositories (such as GENESI-DR)
- The teachers and even the students can visualize and launch large scale computing operations on satellite images, using transparently the Grid processing resources and facilities
- eGLE uses Grid and can be extended very easy to any complex processing based on Web services or Cloud Computing (for example integrating already developed Geospatial Web Services like WMS, WCS, WFS, WPS etc.)
- The modular structure of eGLE application allows the integration of new Tools which could encapsulate any new functionalities, implemented in various technologies

Acknowledgements

- eGLE (GiSHEO eLearning Environment) has been developed through the GiSHEO Project – On Demand Grid Services for High Education and Training in Earth Observation, and supported by European Space Agency through the ESA PECS Arrangement no. 98061 (2008 – 2010).

- eGLE has explored in the development and testing phases the use of spatial data repositories and services provided by the GENESI-DR Project: Ground European Network for Earth Science Interoperations – Data Repository, co-funded by the European Commission (Contract no. 212073, 2008 – 2009).

- To test the Grid based processing eGLE has used the SEE-GRID Infrastructure by collaboration with the SEE-GRID-SCI Project: SEE-GRID eInfrastructure for regional eScience, co-funded by the European Commission (Contract no. 211338, 2008 - 2010).

Questions?

Thank you !

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