

Grid-based Services for Education in Earth Observation



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<http://gisheo.info.uvt.ro>

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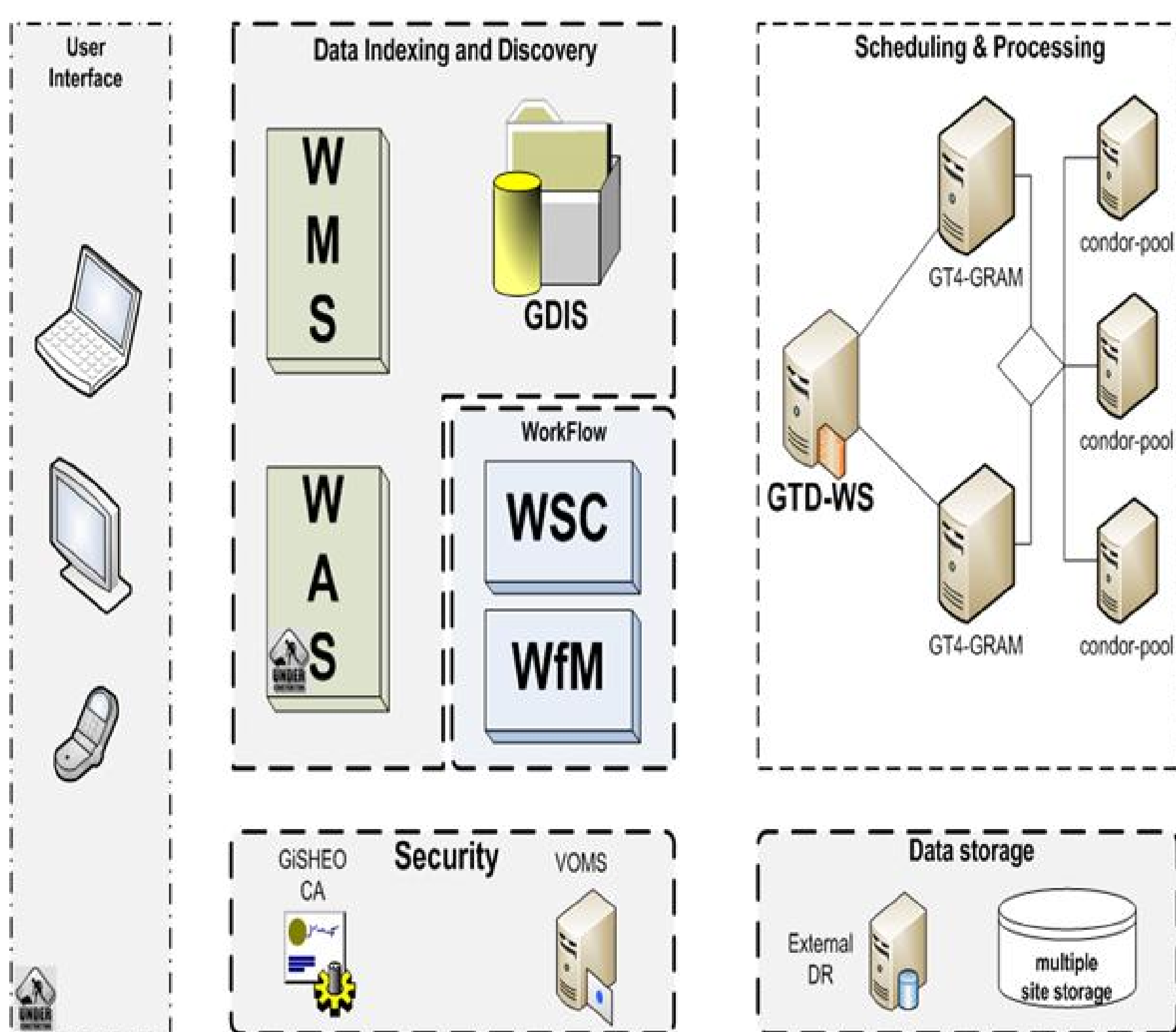
Aim

setting-up & development of a reliable resource for knowledge dissemination, high education & training using existing EO and Grid techs

Technical objectives

- ❑ Set-up a *Grid-based VO* for high education, training and knowledge dissemination for EO
- ❑ Development of specific *instruments* dedicated to on-demand services for HE&T activities based on EO information
- ❑ Facilitate the *access* for the academic and scientific community to on-demand services related to specific applications
- ❑ *Correlation* and harmonization of resources with other projects

Architecture



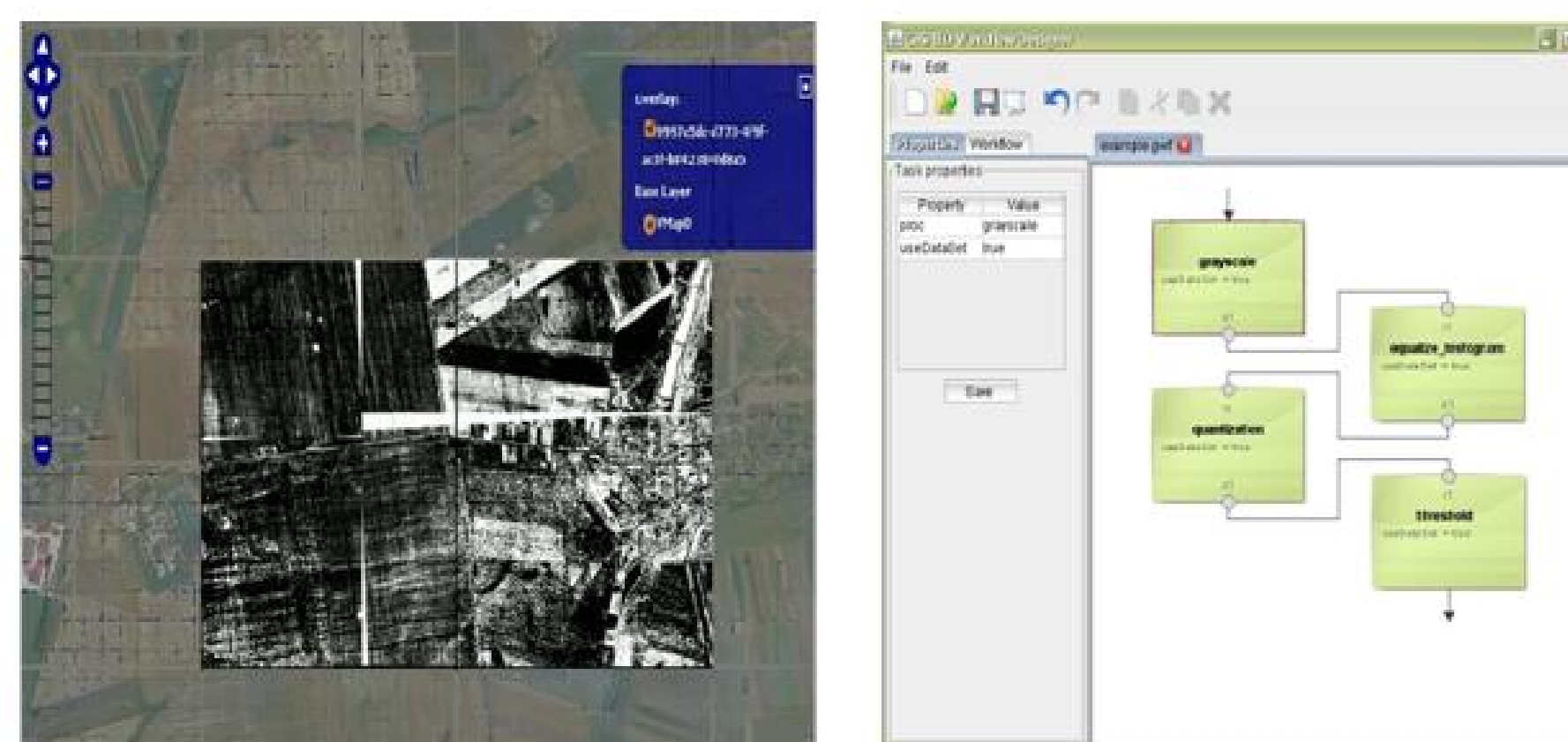
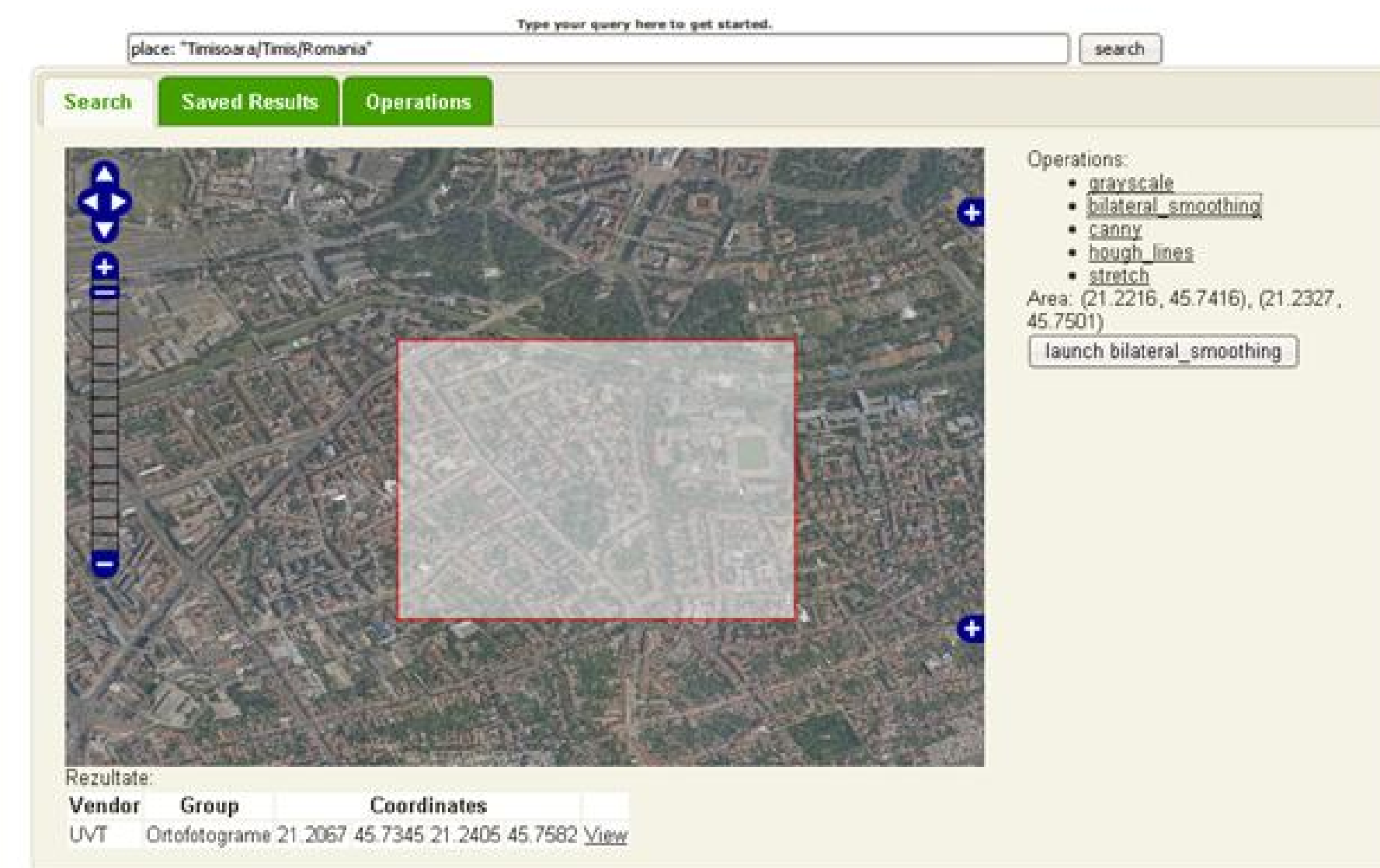
Components

- ❑ GDIS – GiSHEO Data Index Service
- ❑ DTD-WS – Grid Task Dispatcher, Web Service
- ❑ WAS – Web Application Service
 - ❑ eGLE – e-Learning environment
- ❑ WFM – Workflow Manager
 - ❑ OsYRIS – orchestration system
- ❑ WSC – Web Service Composer
 - ❑ gProcess – diagrammatical description of image processing workflows
 - ❑ SILK – text description of workflows
- ❑ VOMS – Virtual Organization Manag. Service
- ❑ CA – Certificate Authority
- ❑ WMS – Web Mapping Service

OSyRIS & SILK

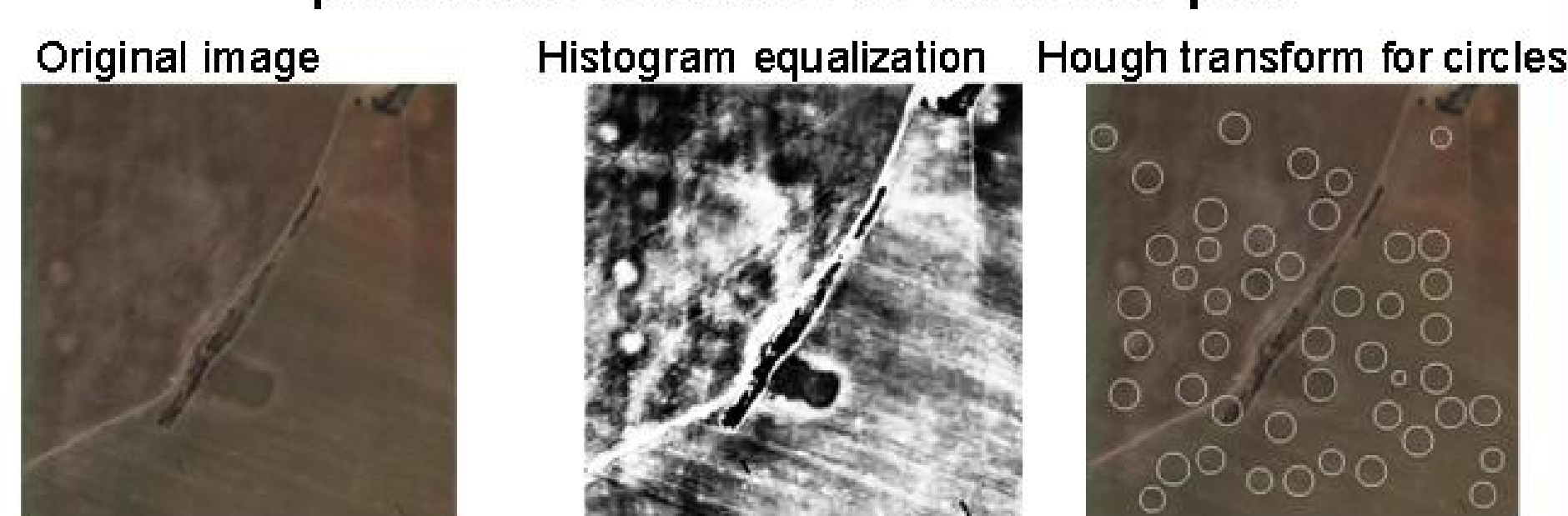
- ❑ OSyRIS – Orchestration System using a Rule based Inference Solution
- ❑ SILK - Workflow language
 - ❑ Simple Language for workflow
 - ❑ rule based intuitive syntax
 - ❑ workflows creation without visual designer
- ❑ Details: <http://gisheo.info.uvt.ro/trac/wiki/Workflow>

User interface

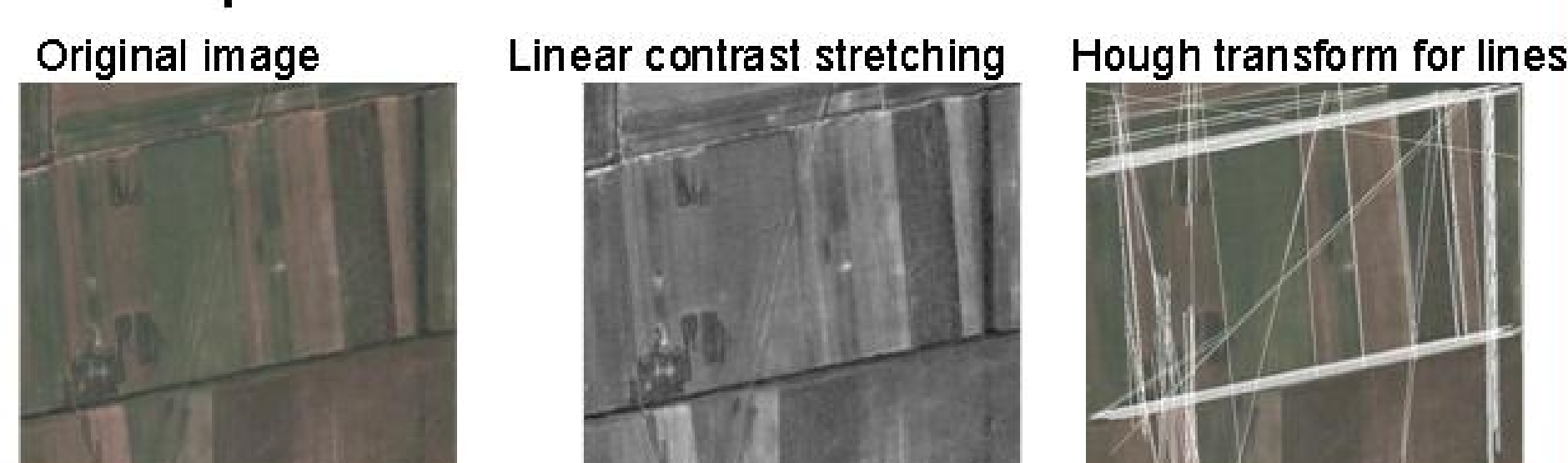


Special services / archaeology

Soil marks analysis: automatic detection of potential location of ancient pits

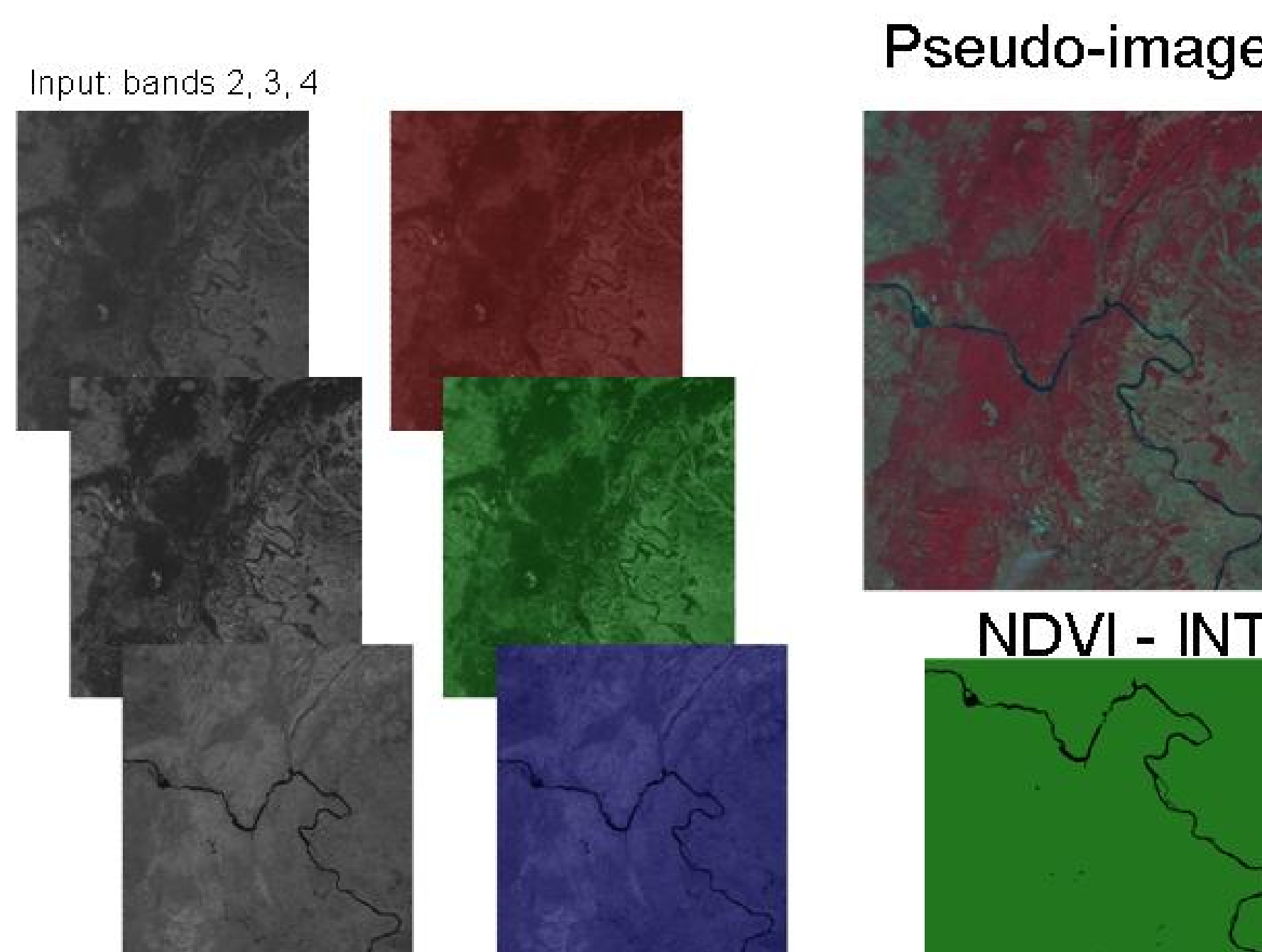
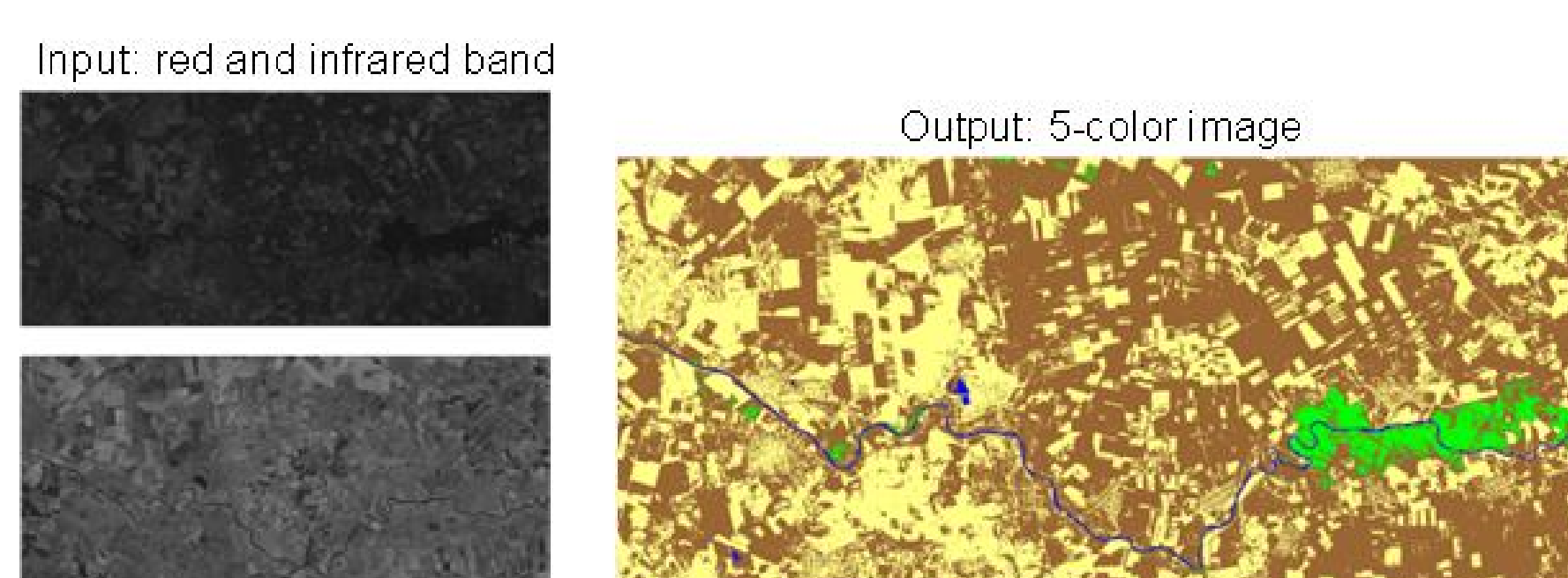


Soil marks analysis: automatic detection of potential ancient linear fortifications



Special services / geography

Unsupervised classification



Technologies

GT4, GDAL, OpenCV, PIL, SOAPpy, ZSI, jQuery TileCache, Mapnik, PostgreSQL, PostGIS, Drols, CherryPy, OpenLayers, Mako, WSFI, PROJ.4

Project teams

- UVT - West University of Timisoara
- UTCN - Technical University in Cluj Napoca
- ROSA - Romanian Space Agency
- INCAS - Institute for Aerospace Research

Developer teams

UVT: D.Zaharie, M.Neagul, M.Frincu, S.Panica, R.Ciorba, A.Dinis, M. Torok, D. Micle

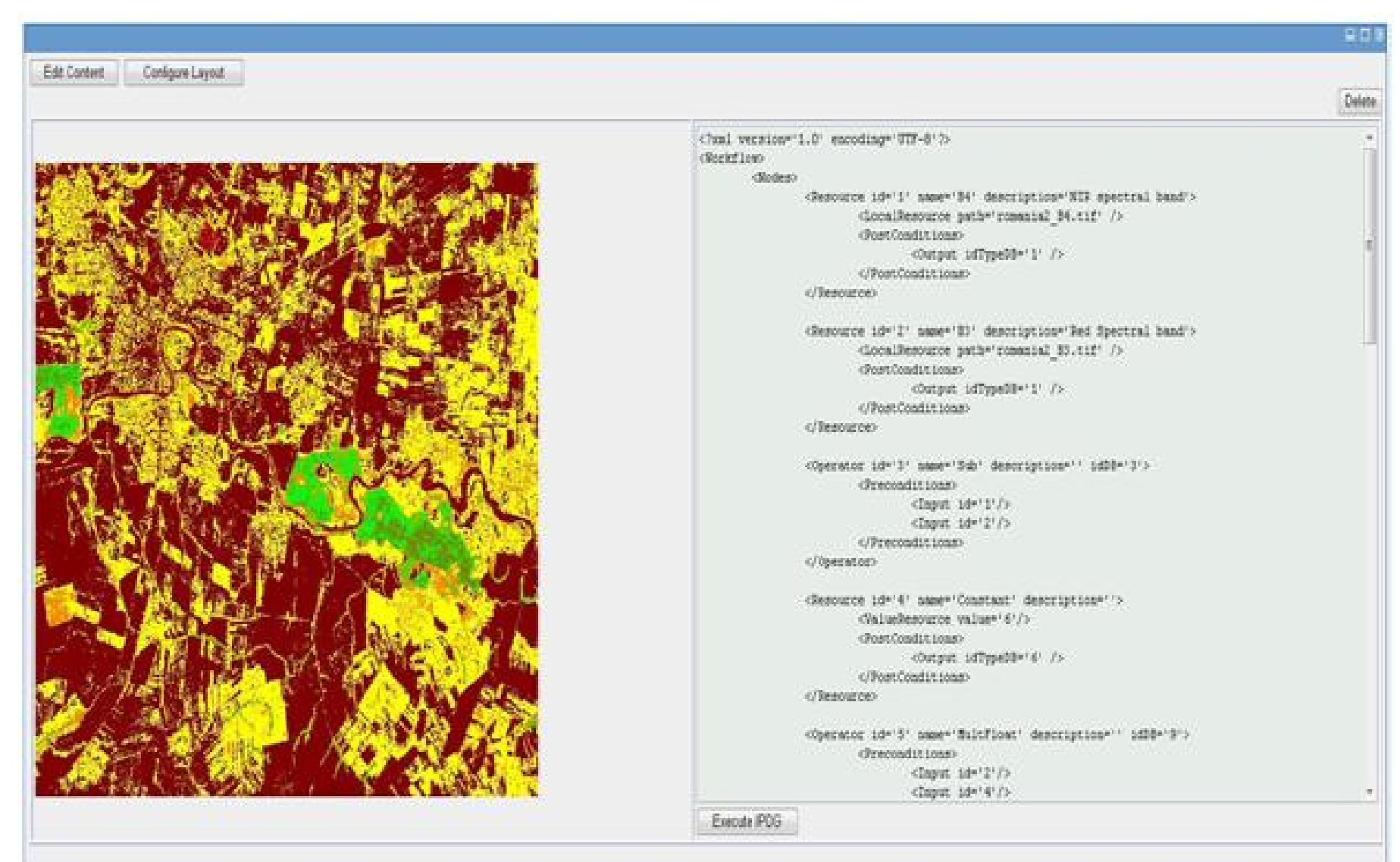
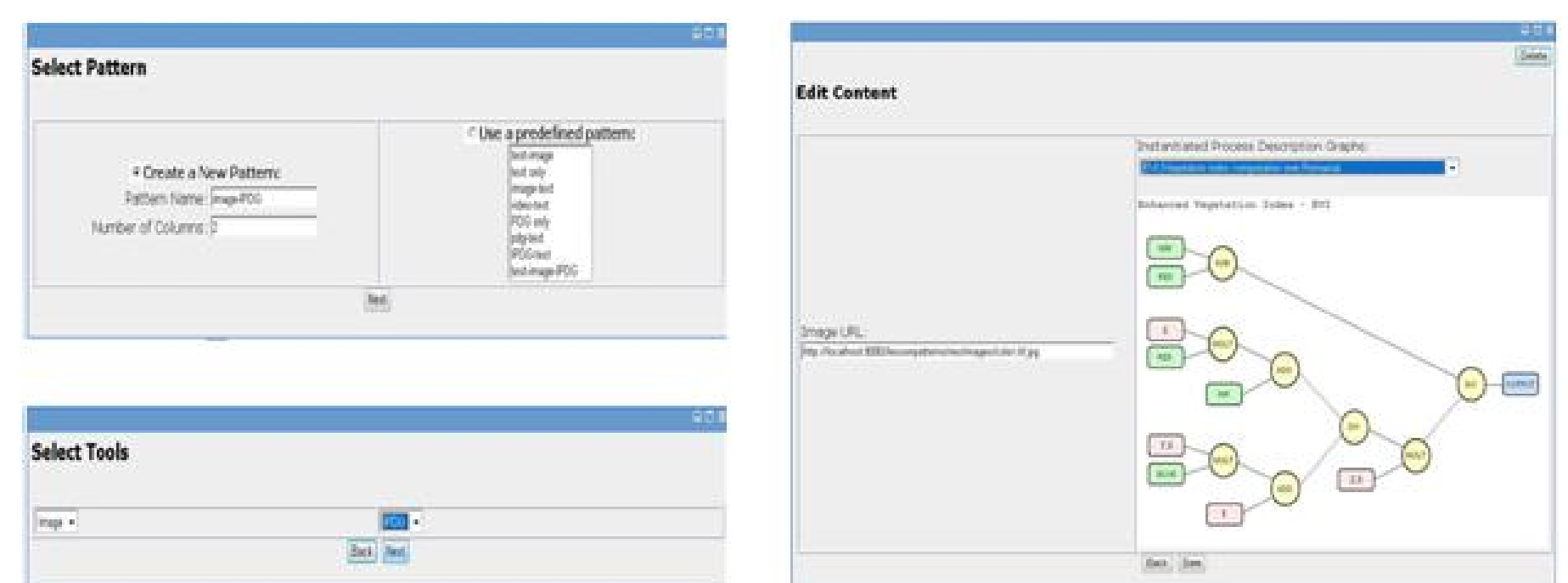
UTCN: D.Gorgan, V.Bacu, T.Stefanut

e-Infrastructure

- ❑ 4 clusters at UVT, UTCN, ROSA, INCAS
- ❑ Connection with GENESI-DR catalogue

eGLE

functionalities needed to create the visual appearance of the lesson through the usage of visual containers like tools, patterns and templates.



Training & dissemination events

- ❑ 27 September 2009 during SYNASC 2009 <http://gisheo.info.uvt.ro/trac/wiki/GiSHEOTrainingSeptember2009>
- ❑ 18 December 2008 during GridTDT3 <http://web.info.uvt.ro/~petcu/gridtdt3.html>
- ❑ 4 April 2008 during GridTDT2 <http://web.info.uvt.ro/~petcu/gridday.html>

References

- ❑ Designing a Grid-based Training Platform for Earth Observation. S. Panica, M. Neagul, D. Petcu, T. Stefanut, D. Gorgan, SYNASC 2008, IEEE CS, 2009, 394-397
- ❑ Grid Based Training Environment for Earth Observation, D. Gorgan, T. Stefanut, V. Bacu, GPC 2009, LNCS 5529, 98-109
- ❑ Gisheo: On Demand Grid Service Based Platform for EO Data Processing. M. Frincu, S. Panica, M. Neagul, D. Petcu, HiperGrid 2009, Politehnica Press, 415-422.
- ❑ Remote Sensed Image Processing on Grids for Training in Earth Observation. D. Petcu, D. Zaharie, M. Neagul, S. Panica, M. Frincu, D. Gorgan, T. Stefanut, V. Bacu. In Image Processing, V. Kordic (ed.), In-Tech 2009.
- ❑ Web and Grid Services for Training in Earth Observation, M. Neagul, S. Panica, D. Petcu, D. Zaharie, D. Gorgan, IDAACS 2009, 21-23 September 2009, IEEE CS in print