The Data Storage / Processing Laboratory

It is equipped with computing, printing, design and support systems which may be used for:

- storing, processing and protecting the research data;
- generating multidisciplinary databases;
- generating maps;
- running numerical and graphical models for evaluating the data collected by using the research systems and equipment;
- designing support applications for preparing and conducting field data collection campaigns (mobile computing systems);
- editing and printing materials and presentations used for disseminating research results (papers, flyers, brochures, posters, documents, etc.);
- making spare parts and various fastening systems / subassemblies by creating 3D plastic models;
- ensuring the necessary energy supply during the field campaigns for collecting environmental samples.

The Data Storage / Processing Laboratory

Members:

Prof.dr. habil. Gabriel MURARIU - https://scholar.google.ro/citations?user=p152f-8AAAAJ&hl=ro&oi=ao

Lect. dr. Adrian ROŞU- https://scholar.google.ro/citations?user=f8WZ4FIAAAAJ&hl=ro

Lect. dr. eng. Maxim ARSENI - https://orcid.org/0000-0002-2444-2298

Dr. eng. Daniel Eduard CONSTANTIN - https://scholar.google.ro/citations?user=8tXV66IAAAAJ&hl=ro&oi=ao

The Data Storage / Processing Laboratory

Equipment:

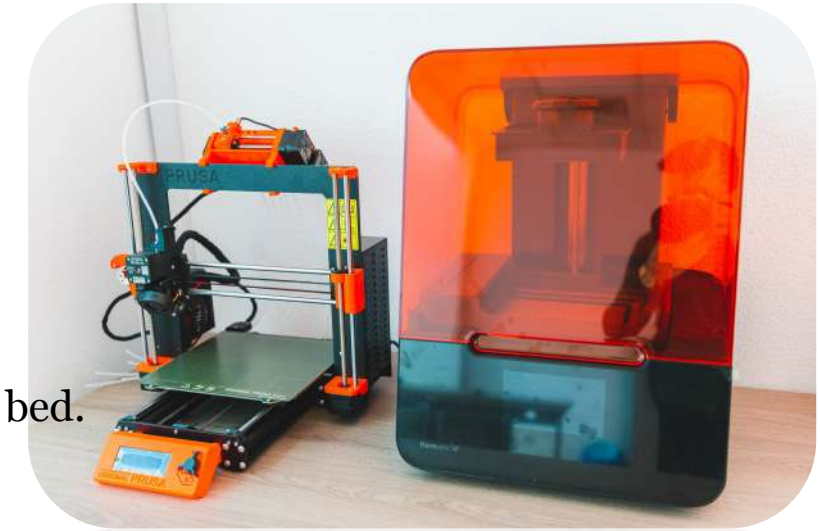
3 D Printer

Uses:

- printing 3D models by using FDM technology;
- printing 3D models by using SLA technology;
- making parts of PLA material or epoxy resin;
- making assemblies and subassemblies and spare parts for the research equipment;
- developing systems for mounting, fixing and fastening the research equipment.

Technical specifications:

- FDM print resolution 50 μm;
- SLA print resolution 25 μm;
- software for 3D models processing;
- WI-FI connexion;
- accessories: printing head with multimaterial, mobile printing bed.



The Data Storage / Processing Laboratory

Equipment:

Ploter A 0

Uses:

printing maps and materials for the dissemination of the research undertaken within *REXDAN* RI.

Technical specifications:

- print speed: minimum 80 A1/hour ± 5%;
- print resolution: minimum 2400 x 1200 optimized dpi;
- print heads: 1 pc;
- line accuracy: ±0.1%;
- minimum line width: 0.002 mm;
- multifunctional capabilities;
- scanner speed: minimum 3.8 cm/sec (color, 200 dpi), minimum 11 cm/sec (monochrome, at 200 dpi);
- copying: minimum 15 cm/sec (color, at 200 dpi), minimum 25 cm/sec (monochrome, at 200 dpi);
- scanning resolution: 600 dpi;
- scan format: JPEG, TIFF and multipage TIFF, PDF and multipage PDF;
- scan destinations: USB, shared network folder, HDD printer, email;
- maximum scan length: 50 m (PDF), 12 m (TIFF), 8 m (JPEG);

The Data Storage / Processing Laboratory

Equipment:

Ploter A 0

Technical specifications:

- average scanning thickness: 0.8 mm;
- sheet feeding, automatic front-loading roll feeding, intelligent roll switching, integrated output stacker, media bin, automatic horizontal cutter;
- scanner: direct scanning paper path for sheet and cardboard originals;
- roll size: 279 to 914 mm;
- sheet size: 210 x 279 up to 914 x 1219 mm;
- standard sheets: A4, A3, A2, A1, A0;
- memory: 128 GB (file processing);
- hard disk: 500 GB self-encrypting;
- printing ways: direct printing from USB flash drive, printing from network shared folder, email printing, Windows driver, Android print service, Apple AirPrint driver for MacOS for iOS, Chrome OS printing, smart app for iOS and Android;
- touchscreen: 15 inches.

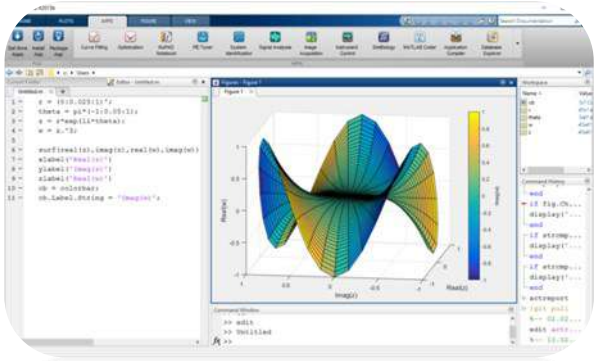
The Data Storage / Processing Laboratory

Equipment:

Matlab

Uses:

- numerical and graphic data processing, algorithm creation and statistical processing;
- control of applications and equipment;
- digital signal processing;
- image processing;
- creation of databases, maps, etc.



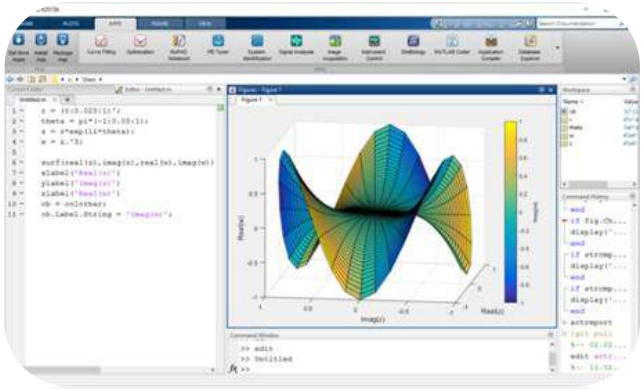
Technical specifications:

- Licence;
- Academic Use;
- Individual;
- Perpetual license;
- Module MATLAB (toolbox):
- Simulink;
- Aerospace Blockset;
- Aerospace Toolbox;
- Bioinformatics Toolbox;
- Computer Vision Toolbox;
- Curve Fitting Toolbox;
- Data Acquisition Toolbox;
- Database Toolbox;
- Deep Learning Toolbox;
- Fixed-Point Designer;
- Global Optimization Toolbox;
- Image Acquisition Toolbox;
- Image Processing Toolbox;
- Instrument Control Toolbox;
- Lidar Toolbox;
- MATLAB Coder;
- MATLAB Report Generator;
- Mapping Toolbox;
- Navigation Toolbox;

The Data Storage / Processing Laboratory

Equipment:

Matlab



Technical specifications:

- OPC Toolbox;
- Optimization Toolbox;
- Parallel Computing Toolbox;
- ROS ToolboxReinforcement; Learning Toolbo;
- Robotics System Toolbox;
- Sensor Fusion and Tracking Toolbox;
- SimBiology;
- SimEvents;
- Simulink 3D Animation;
- Simulink Report Generator;
- SoC Blockset;
- Stateflow;
- Statistics and Machine Learning Toolbox;
- Symbolic Math Toolbox;
- Text Analytics Toolbox;
- UAV Toolbox;
- Vehicle Network Toolbox.

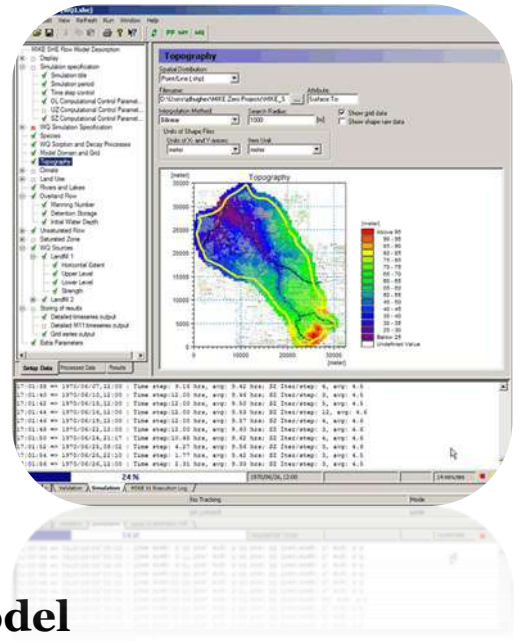
The Data Storage / Processing Laboratory

Equipment:

Uses:

- 1D and 2D flood simulation;
- pollutant dispersion;
- flood forecasting;
- flood management and mitigation;
- flood risk analysis and flood hazard mapping;
- emergency planning of flood evacuation routes;
- studies regarding the breaking of dams;
- integrated modeling of urban, fluvial and coastal inundation.

Flood simulation program



Technical specifications:

Mono-dimensional model

- series of channels connected with discrete cross-sections at regular intervals (eg 100 - 1000 m);
- output at each cross section may include mean water level, depth and velocity;
- result files are relatively small (MB).

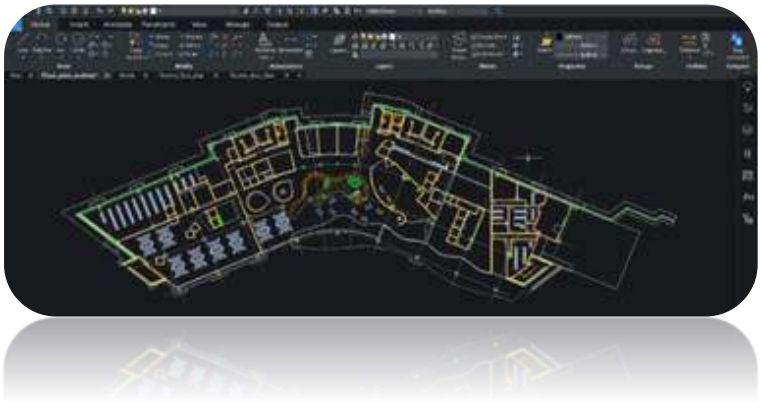
Bidimensional model

- regular grid-based topography with cell sizes between 10 and 100 m;
- the output at each grid cell may include water level, depth, and velocity;
- the result files are relatively large (100 MB per simulation).

The Data Storage / Processing Laboratory

Equipment:

CAD data processing program



Uses:

- 2D and 3D CAD design for civil constructions, hydrotechnical constructions, ecological reconstruction, etc. by creating and managing BIM models.

Technical specifications:

- 2D and 3D CAD design for civil constructions, constructions available for Windows, macOS and Linux.
- ribbon-style interface, similar to AutoCAD, customizable;
- compatible with DWG file formats, facilitating collaboration with AutoCAD users.
- supports industry standard files (DGN, PDF);
- includes functions for preparing 3D printing and exporting STL files;
- supports LISP, DCL and other programming languages for customizing and automating tasks;
- provides a wide range of APIs for third-party developers to create custom applications and add-ons;
- integration with cloud storage services and mobile apps to access and work on your CAD files from anywhere.

The Data Storage / Processing Laboratory

Equipment:

High-performance laptop for numerical and graphic modelling

Uses:

- running advanced numerical and graphic simulation models;
- making complex calculation and statistical algorithms;
- making maps, etc.

Technical specifications:

- processor: Intel Core i9 Gen 11 6 physical cores and minimum base frequency 2.1 GHz;
- installed memory: 32 GB;
- video card: 16 GB, GDDR6;
- storage (hard drive/HDD): installed: M.2, PCIe NVMe, 1 TB SSD;
- integrated speakers;
- display: 15.6 inches, FHD;
- integrated camera and network card;
- wireless: Wi-Fi 5;
- Bluetooth 5.0;
- Qwerty keyboard, backlit;
- interfaces: USB, LAN RJ-45, Thunderbolt, Universal Audio Jack / Audio Jack, Microphone Jack;
- SD Card Reader;
- HDMI or DP;
- software: Windows 10 Pro or equivalent.

The Data Storage / Processing Laboratory

Equipment:

Desktop computer for graphical and numerical modeling

Uses:

- running advanced numerical and graphic simulation models;
- making complex calculation and statistical algorithms;
- making maps, etc.

Technical specifications:

- installed processors: Intel Xeon Gen 2 8 physical cores and base frequency 2.1GHz.;
- installed memory: 32GB RAM, DDR4 RDIMM ECC;
- SSD M.2 NVMe SSD 512 GB;
- HDD 3.5" 8TB minimum 7200rpm SATA;
- graphics card Nvidia Quadro RTX 5000, 16GB; RAID controller;
- support for RAID 0, 1, 5, 10;
- USB 3.1 interfaces, of which 2 Type-C ports, DP 1.4, RJ-45 port 10/100/1000 Mbps;
- universal audio jack;
- audio line out and audio line in / microphone;
- monitor diagonal: 24" with panel, IPS;
- supported resolution: 1920 x 1080 Full HD;
- contrast 1000:1;
- brightness 250 cd/m2 ± 5%.

The Data Storage / Processing Laboratory

Equipment:

All in One colour A3 printer

Uses:

- printing bibliographic materials, research results, maps, etc.

Technical specifications:

- functions: printing, copying, scanning, optional fax;
- processor: 1.2 Ghz;
- memory: 6 GB RAM;
- storage: 600 GB High-Performance SHD Hard Disk;
- smooth functional touch screen with activated gestures of 20 cm with color graphic display;
- color scanning, automatic duplex scanning (dual and ADF);
- scanning speed: 240 ipm (images per minute) black and white and color;
- file types: PDF, High Compression PDF, JPEG, TIFF, MTIFF, XPS, PDF/A, TEXT (OCR), TEXT Unicode (OCR), RTF (OCR), HTML (OCR), CSV (OCR).

The Data Storage / Processing Laboratory

Equipment:

All in One colour A4 printer

Uses:

- printing bibliographic materials, research results, maps, etc.

Technical specifications:

- functions: black and white and colour printing, copying, scanning;
- paper feed (80g/m2): min. 300 A4 sheets;
- memory: 2 GB;
- interfaces: USB 2.0
- 10/100/1000Mbps network;
- wireless: 802.11 b,g,n or equivalent;
- copy speed (monochrome/colour): 26 ppm A4 24 ppm A4 duplex;
- printing speed (monochrome/colour): 26 ppm A4 47 ppm A5;
- printing resolution: 600x600 dpi;
- printing languages: PCL 6, Adobe PS3, native PDF;
- automatic document feeder with single-pass colour two-sided scanning;
- scan speed (A4, 300dpi): 35 ipm; monochrome/ color A4;
- ADF capacity (80 g/m2): 50 sheets;
- scan destinations: USB, e-mail, SMB, FTP;
- network scan driver: TWAIN;
- document format: JPEG, TIFF.