

# CITADELS

## TESTBED DESCRIPTION



Cultivating Industry 5.0 Talents: Academia-industry collaboration and empowerment through accessible DEep technoLogieS

Project acronym:	CITADELS
Project topic:	HORIZON-WIDERA-2024-TALENTS-03-01
Project number:	101217281
Type of action:	HORIZON-CSA
Project starting date:	1 September 2025
Project duration:	48 months
Dissemination level	PU

---

# 1 Metatron 4025 Diagnostic System

TestBed title	Metatron 4025 Diagnostic System
---------------	---------------------------------

## 1.1 Short summary

<p>The METAPATHIA GR (Metatron) system model 4025 is a computer-assisted analysis and research platform combining optical scanning, spectral analysis, organ/tissue modelling, and a database of reference spectral patterns for the assessment of physiological signals. The system supports multiple examination modes (express, standard, detailed), spectral analysis, visualization of anatomical models, and comparison of measured data with stored reference patterns. It includes software modules for data management, visualization, and structured examination workflows, as well as options for integrating external laboratory data. The TestBed provides a software-driven environment for exploratory analysis, data visualisation, and research-oriented workflows. Within the CITADELS framework, it supports Proof-of-Concept activities, experimentation, and training in advanced data-driven approaches to physiological signal interpretation.</p>	
Principal Investigator Name	Marko Močnik
Position / institutional role	Director
Email	marko@p-tech.si
Phone No.	+386 2 530 82 00
ORCID persistent identifier (PID)	N/A
TestBed Responsible Name (if different from PI)	N/A
Funding source(s) for TestBed's acquisition	Interreg Danube Region Programme
Relevant Keywords	Spectral analysis, physiological data analysis, medical informatics, bio-signal processing, data visualisation, research platform

## 1.2 Hosting Institution

Name of Host Organization	Pomurje Technology Park
Department or Lab	N/A
Name of Building	Pomurje Technology Park
Physical Address	Plese 9 A 9000 Murska Sobota
Website Links	<a href="https://www.p-tech.si/en/">https://www.p-tech.si/en/</a>
Institutional contact name	Marko Močnik
Institutional contact email	marko@p-tech.si

### 1.3 Photos/videos






Main photo:



### 1.4 DeepTech Area and Application Domain

DeepTech Area	Check all that apply	Check ONE main area
Extended Reality	<input type="checkbox"/>	
Robotics	<input type="checkbox"/>	
Artificial Intelligence	<input type="checkbox"/>	
Human Machine Interfaces	<input type="checkbox"/>	
Biotechnology	<input type="checkbox"/>	
Other: Medical Informatics, Data Analysis	✓	✓

The TestBed operates within the domain of health-related data processing by enabling acquisition, analysis, and visualisation of physiological data through software-driven workflows. It supports data analysis, model-based visualisation, and structured exploration of complex datasets within a unified platform. The TestBed is intended for research, experimentation, and training in data-driven approaches to health-related analysis, supporting Proof-of-Concept activities and methodological development.

Application Domain	Check all that apply
Manufacturing 	<input type="checkbox"/>
Healthcare 	<input checked="" type="checkbox"/>
Logistics 	<input type="checkbox"/>
Agriculture 	<input type="checkbox"/>
Maintenance & inspection 	<input type="checkbox"/>
Other	<input type="checkbox"/>

### 1.5 Potential Stakeholders and Exploitation Scenarios

Non-academic stakeholders	
Industrial Partners	<input type="checkbox"/>
SMEs	<input checked="" type="checkbox"/>
Startups	<input checked="" type="checkbox"/>
Government Bodies	<input type="checkbox"/>
Professional Associations	<input type="checkbox"/>
Community	<input type="checkbox"/>
Others 1 (comma-separated)	<input type="checkbox"/>
Academic stakeholders	
Undergraduate students	<input checked="" type="checkbox"/>
MSc students	<input checked="" type="checkbox"/>
PhD students	<input checked="" type="checkbox"/>
Researchers	<input checked="" type="checkbox"/>
Others 2 (comma-separated)	<input type="checkbox"/>
Other types of stakeholders	

Others 3 (comma-separated)	
----------------------------	--

	Check all that apply	Short notes (optional)
Internal academic research	<input type="checkbox"/>	
Collaborative research with external academic partners	<input checked="" type="checkbox"/>	
Contract research / Proof-of-Concept for industry	<input checked="" type="checkbox"/>	
Pilot / DeepTech Deployment in operational environment	<input checked="" type="checkbox"/>	
Training services (courses, workshops, certification)	<input checked="" type="checkbox"/>	
Service provision (testing, benchmarking, validation)	<input checked="" type="checkbox"/>	
Open access for walk-in users (e.g. open days / hackathons)	<input type="checkbox"/>	
Other (specify): _____	<input type="checkbox"/>	

## 1.6 Formal Access Conditions

Type of partner asking for access	Type of contractual relationship	Check all that apply
Academic partners	No contract (direct access)	<input type="checkbox"/>
	Direct contract between parties (e.g., research agreement)	<input checked="" type="checkbox"/>
	Indirect contract between parties (e.g., project framework)	<input checked="" type="checkbox"/>
	Other / Describe	<input type="checkbox"/>
Industrial	No contract (direct access)	<input type="checkbox"/>
	Direct contract between parties (e.g., research agreement)	<input checked="" type="checkbox"/>
	Indirect contract between parties (e.g., project framework)	<input checked="" type="checkbox"/>
	Other / Describe	<input type="checkbox"/>

Type of prerequisites	Description of prerequisites	Check all that apply
Agreements	Confidentiality agreement for proprietary algorithms	<input type="checkbox"/>
	Data sharing agreement for datasets generated	<input checked="" type="checkbox"/>
	IP agreements	<input checked="" type="checkbox"/>
	Other / Describe	<input type="checkbox"/>
Insurance	Users must have appropriate liability coverage through their home institution	<input checked="" type="checkbox"/>
	Other / Describe	<input type="checkbox"/>

## 1.7 Training and Safety

Mandatory technical training	Use by trained professionals, operation in accordance with established procedures.
Recommended technical training	N/A
Mandatory safety requirements	Operation under supervision, compliance with applicable safety guidelines, compliance with electromagnetic compatibility (EMC) guidelines, stable power supply, appropriate operating conditions.

## 1.8 Technical description

Hardware	<ul style="list-style-type: none"> <li>• Main unit: Microprocessor-controlled unit connected to a laptop or workstation, powered via mains adaptor (100–240 V, 50/60 Hz; device input 15 V DC).</li> </ul>
	<ul style="list-style-type: none"> <li>• Optical scanner interface: Optical front-end used for capturing imagery and positional data during examination workflows.</li> </ul>
	<ul style="list-style-type: none"> <li>• Peripheral components: Include inductors and additional accessories supporting specific measurement and analysis modes.</li> </ul>
Software needed to run the TestBed	<ul style="list-style-type: none"> <li>• HSS “Metatron” software: Provides modules for patient data management, examination workflows (express, standard, detailed), spectral analysis, visualization, and reporting.</li> </ul>
	<ul style="list-style-type: none"> <li>• Analysis functionalities: Includes spectral- entropic analysis, multi-level data exploration, and visualization of model- based representations.</li> </ul>
Standards that apply	<ul style="list-style-type: none"> <li>• IEC/EN standards for electromagnetic compatibility (EMC) – guidelines for ensuring electromagnetic compatibility of electronic and medical systems.</li> </ul>
	<ul style="list-style-type: none"> <li>• IEC 60601 – standard for safety and essential performance of medical electrical equipment.</li> </ul>
	<ul style="list-style-type: none"> <li>• IEC 61000 – standard for electromagnetic compatibility (EMC) requirements and testing.</li> </ul>

## 1.9 Existing Software Assets (i.e. in GitHub)

Link:	Short description:
N/A	N/A

## 1.10 TestBed documentation

Type	Short description:	Name and source (link):
Documentation	Product brochure describing system principles, analytical functionalities, application areas, and technical features of the Metatron 4025 system.	Metatron 4025 Diagnostic System – Product brochure, <a href="https://www.neogenesisystems.com/wp-content/uploads/2016/09/Metatron-Brochure.pdf">https://www.neogenesisystems.com/wp-content/uploads/2016/09/Metatron-Brochure.pdf</a>

### 1.11 Application cases

Application case:	Short description:	Photo of the Application case
Analytical support in clinical workflows	Use of the system to support structured analysis and interpretation of physiological data within professional environments.	N/A
Research and exploratory studies	Application of the system for experimental analysis, including multi-level data exploration and comparison across datasets.	N/A
Comparative monitoring	Use of structured workflows to analyze and compare data across repeated examinations.	N/A
Training and educational use	Use of the TestBed for training healthcare professionals and researchers in data analysis, system operation, and interpretation workflows.	N/A
Research-oriented experimental workflows	Use of advanced system modes within controlled research protocols for exploratory investigations.	N/A

Possible TRL application range	TRL4	<input type="checkbox"/>
	TRL5	<input type="checkbox"/>
	TRL6	<input type="checkbox"/>
	TRL7	<input type="checkbox"/>
	TRL8	<input checked="" type="checkbox"/>

### 1.12 Funding source

Funding source acknowledgements
Interreg Danube Region Programme

### 1.13 Ethical and societal aspects

Ethical and societal aspect:	Short description:
Ethical perspective	The system involves handling of sensitive data. All data processing must comply with applicable data protection regulations, including GDPR. The use of identifiable data requires appropriate consent and adherence to institutional data governance and confidentiality requirements.