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DARIAH-PL:

Towards advanced e-infrastructure
for the Digital Arts and Humanities

Session: *From Space to the Ocean Bed*

Authors: Maciej Głowiak - *presenter*, Cezary Mazurek, Tomasz Parkoła, Ewa Kuśmierek, Dominik Purchała

TNC'22 Conference, Triest --- Thu, 16 June 2022, 14:00-14:30, Room A

DARIAH ERIC – A network to enhance and support digitally enabled research and teaching across the Arts and Humanities.
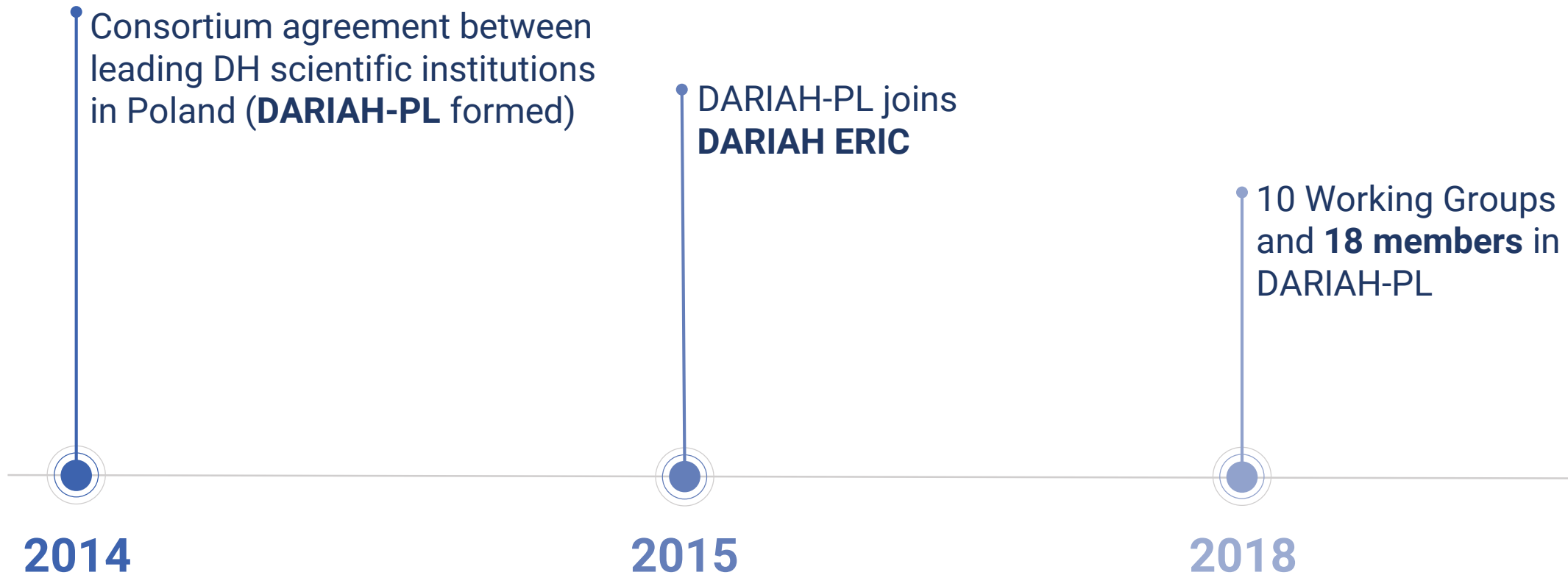
DARIAH-PL – Polish consortium of 18 institutions to introduce to the European network DARIAH ERIC, deepen cooperation and build infrastructure
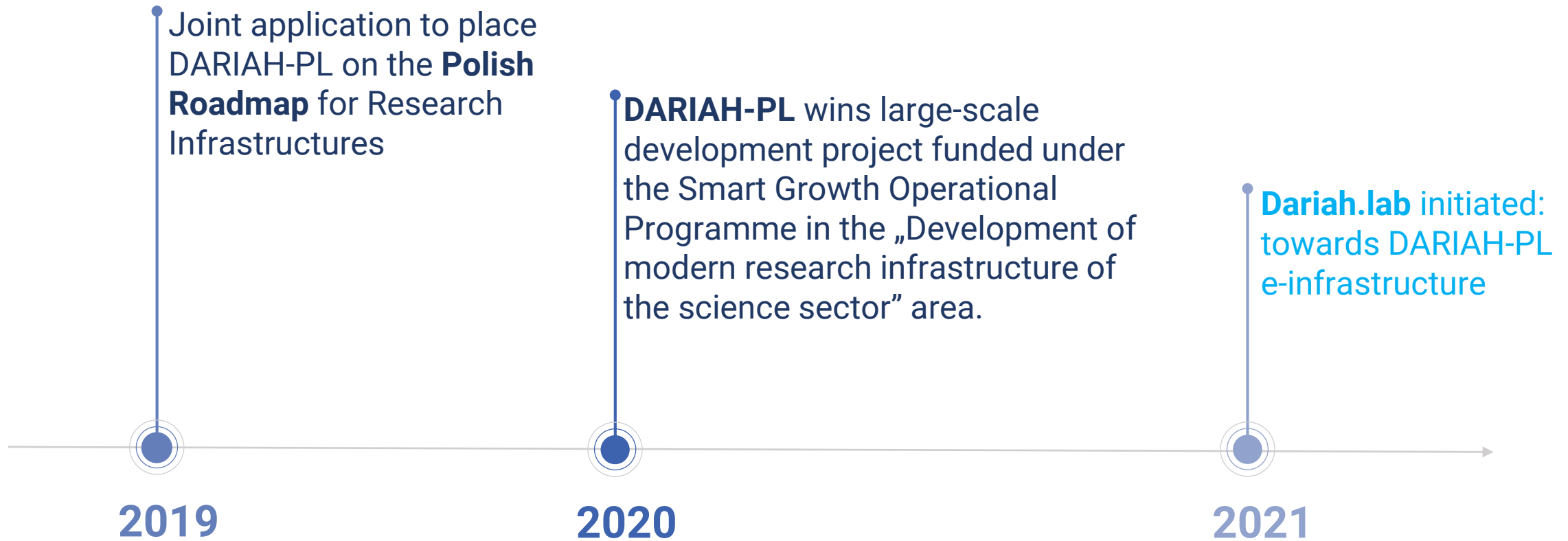
Dariah.lab – DARIAH-PL is Polish national large-scale development and infrastructure project started in 2021...

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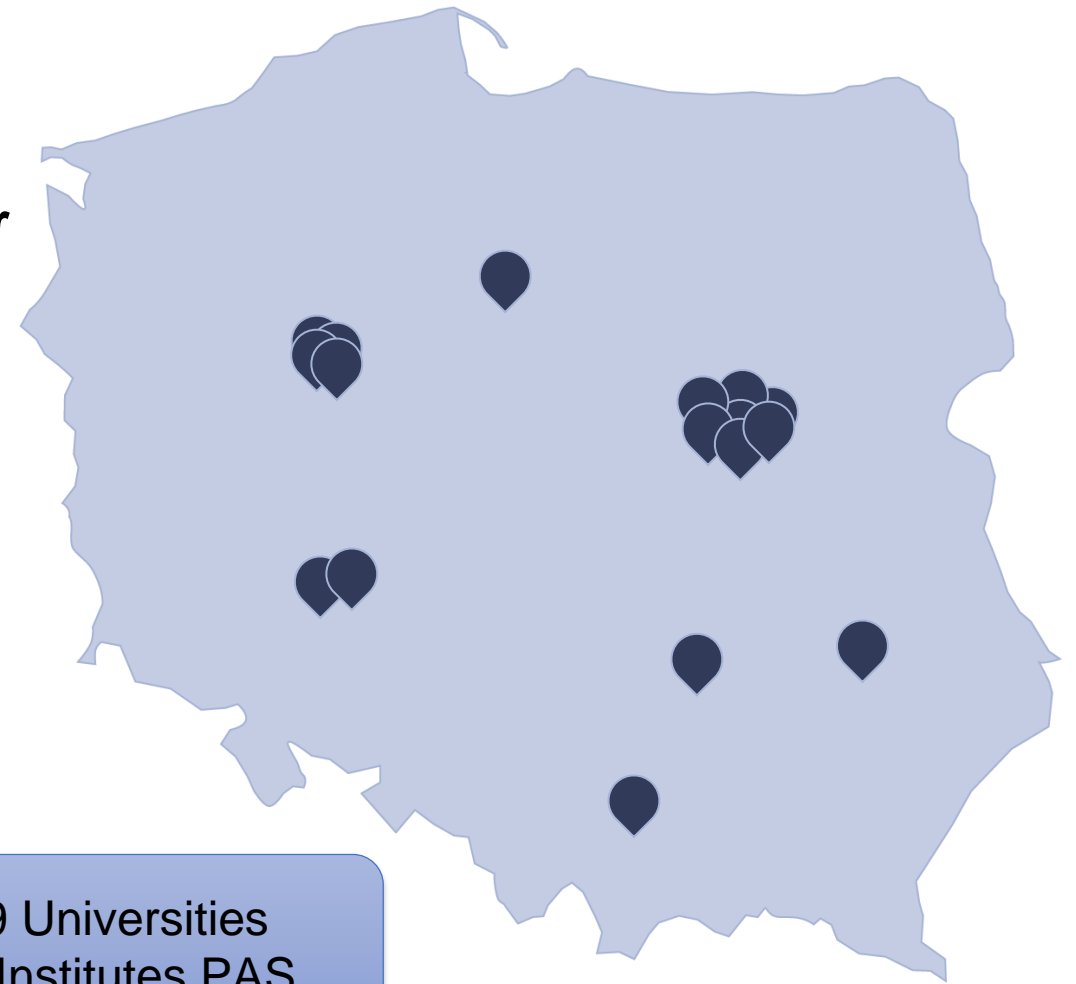
Key milestones for DARIAH-PL

Consortium agreement between leading DH scientific institutions in Poland (**DARIAH-PL** formed)

DARIAH-PL joins **DARIAH ERIC**

10 Working Groups and **18 members** in DARIAH-PL

2014

2015

2018

Key milestones for DARIAH-PL

Joint application to place DARIAH-PL on the **Polish Roadmap** for Research Infrastructures

DARIAH-PL wins large-scale development project funded under the Smart Growth Operational Programme in the „Development of modern research infrastructure of the science sector" area.

Dariah.lab initiated: towards DARIAH-PL e-infrastructure

2019   **2020**   **2021**

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1. University of Warsaw
2. Academy of Fine Arts in Warsaw
3. Institute of Literary Research PAS
4. **Poznań Supercomputing and Networking Center**
5. Institute of History PAS
6. Institute of Polish Language PAS
7. Institute of Computer Science PAS
8. Institute of Slavic Studies PAS
9. Institute of Arts PAS
10. Wrocław University of Science and Technology
11. Adam Mickiewicz University
12. Jagiellonian University in Kraków
13. Maria Curie-Skłodowska University
14. Nicolaus Copernicus University in Toruń
15. University of Wrocław
16. Poznań University of Technology

9 Universities
7 Institutes PAS

Fundusze
Europejskie
Inteligentny Rozwój

Rzeczpospolita
Polska

Unia Europejska
Europejski Fundusz
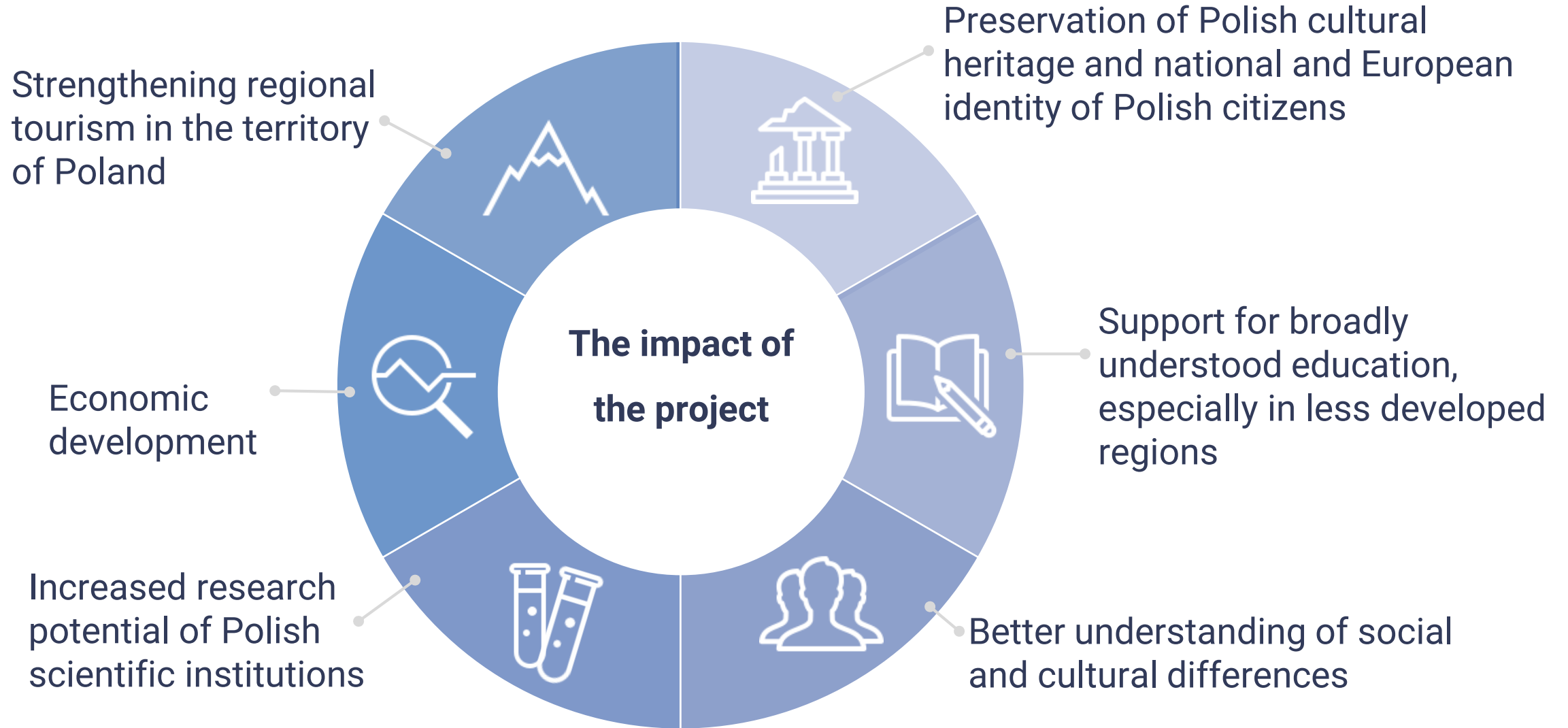Rozwoju Regionalnego

The aim of the project is to **build Dariah.lab infrastructure:**

Laboratory equipment, software tools, integrated digital resources from various fields of art and humanities research

Facts:
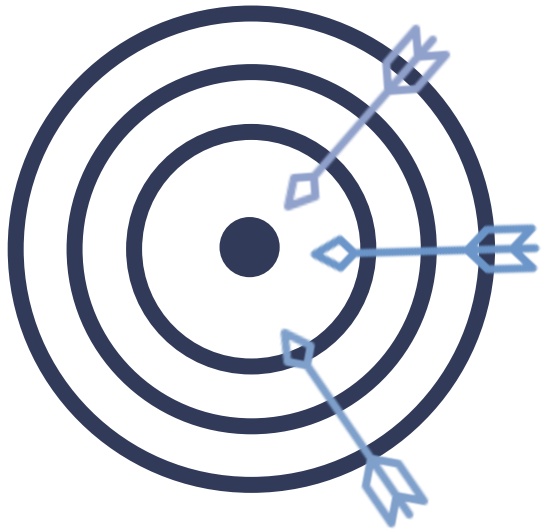
- Timeframe: 1 Jan **2021** – 31 Dec **2023**
- Partners: **16**
- Locations: **7** in Poland
- Total budget: **28M€** (21,7M€ EU contribution)
- Strong economic focus – the infrastructure has to **find its use in the commercial sector**
- Access for research & academic communities and projects, organizations, SMEs, companies

The impact of the project

Preservation of Polish cultural heritage and national and European identity of Polish citizens

Support for broadly understood education, especially in less developed regions

Better understanding of social and cultural differences

Increased research potential of Polish scientific institutions

Economic development

Strengthening regional tourism in the territory of Poland
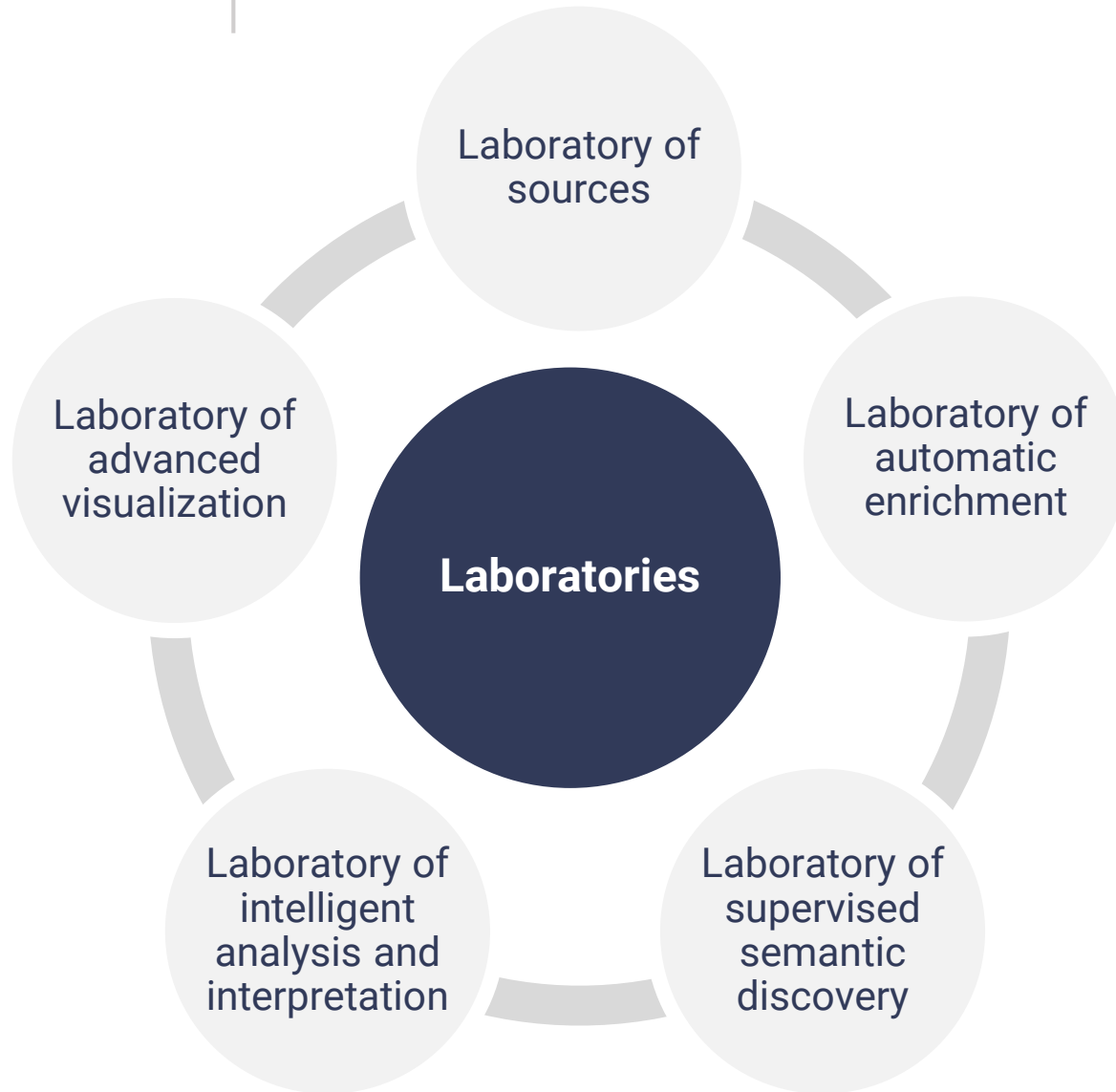
Cultural heritage

Supports access to and analysis of information about national culture in all its dimensions, i.e. source texts, their annotated critical editions, information about objects and forms of culture, etc.
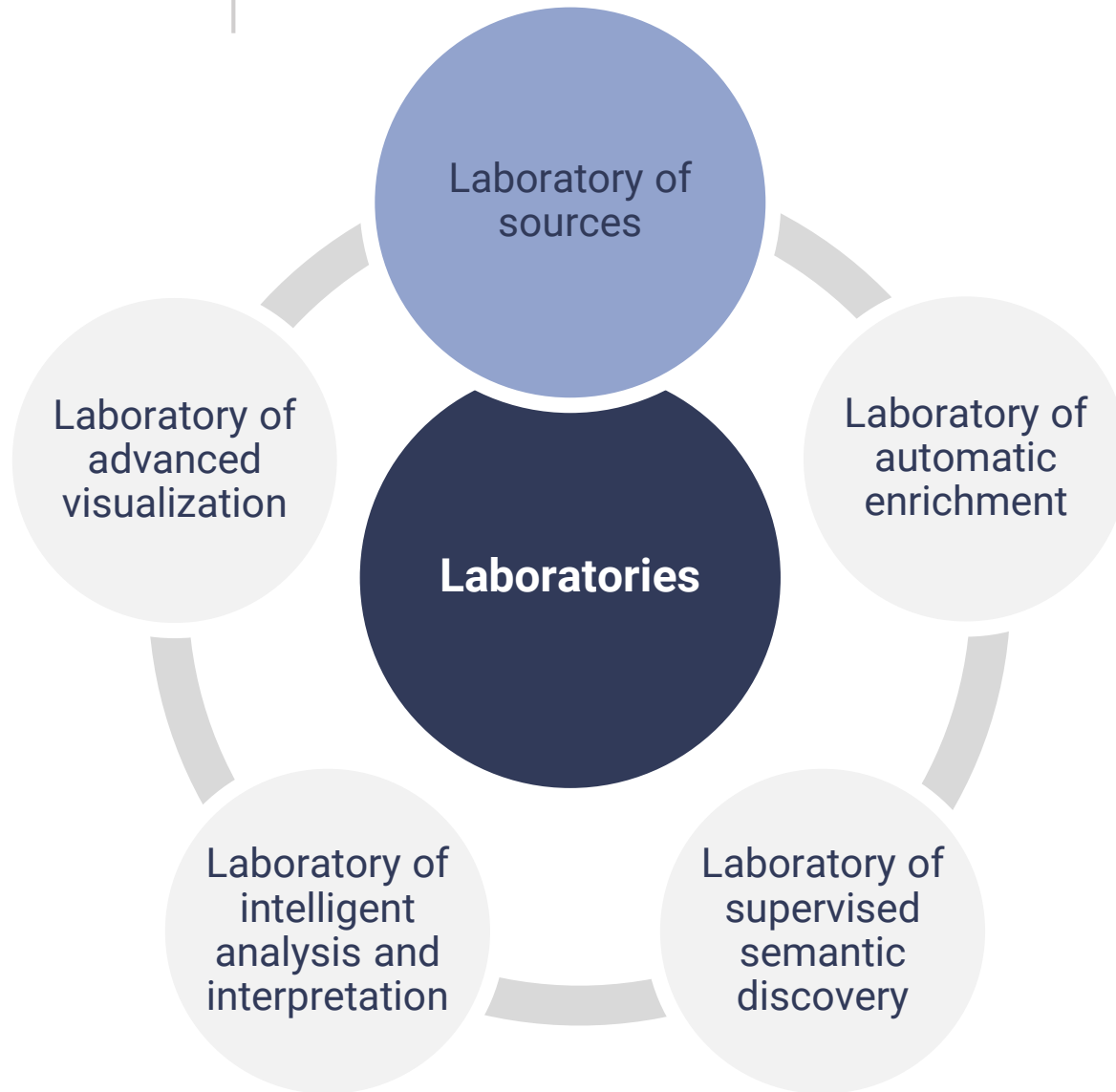
Geoarcheology

Supports non-invasive analysis and documentation of land, landscape or monuments.

Musicology

Supports research on traditional music and research on the perception of musical phenomena (human cognitive sphere).

European Funds
Smart Growth

Republic of Poland

European Union
European Regional Development Fund

The infrastructure is composed of **5 distributed research laboratories**:

1. Laboratory of **sources**
2. Laboratory of **automatic enrichment**,
3. Laboratory of **supervised semantic discovery**,
4. Laboratory of intelligent **analysis and interpretation**,
5. Laboratory of advanced **visualization**.

European Funds
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Republic of Poland

European Union
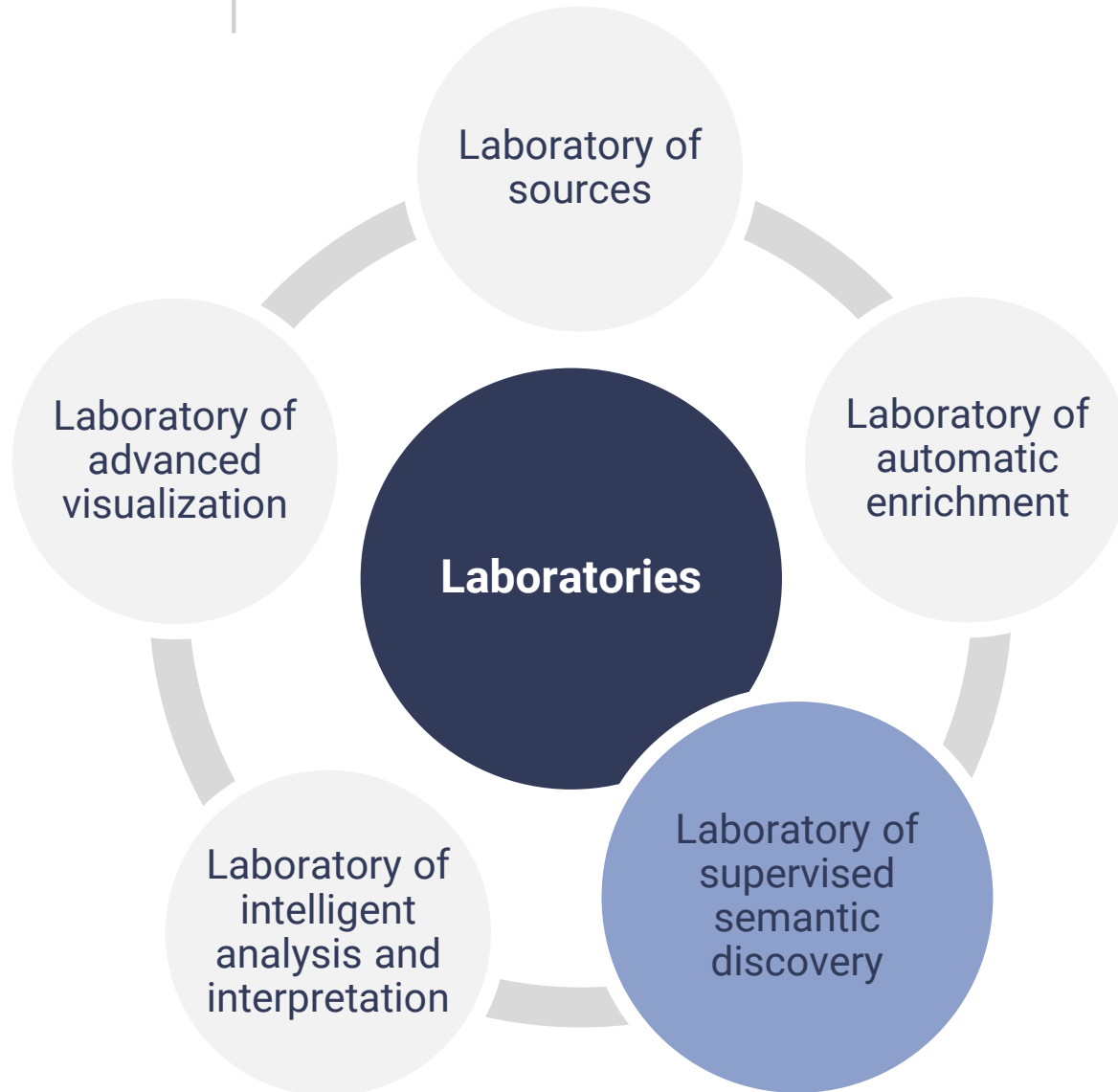European Regional Development Fund

- Equipment to advance archeology, geology, musicology, ethnology, art and cultural heritage research

- Software/services for PIDs, SaaS (data) repositories, high-volume data streaming as well as multimodal corpuses

Laboratory of sources

Laboratory of advanced visualization

Laboratories

Laboratory of automatic enrichment

Laboratory of intelligent analysis and interpretation

Laboratory of supervised semantic discovery

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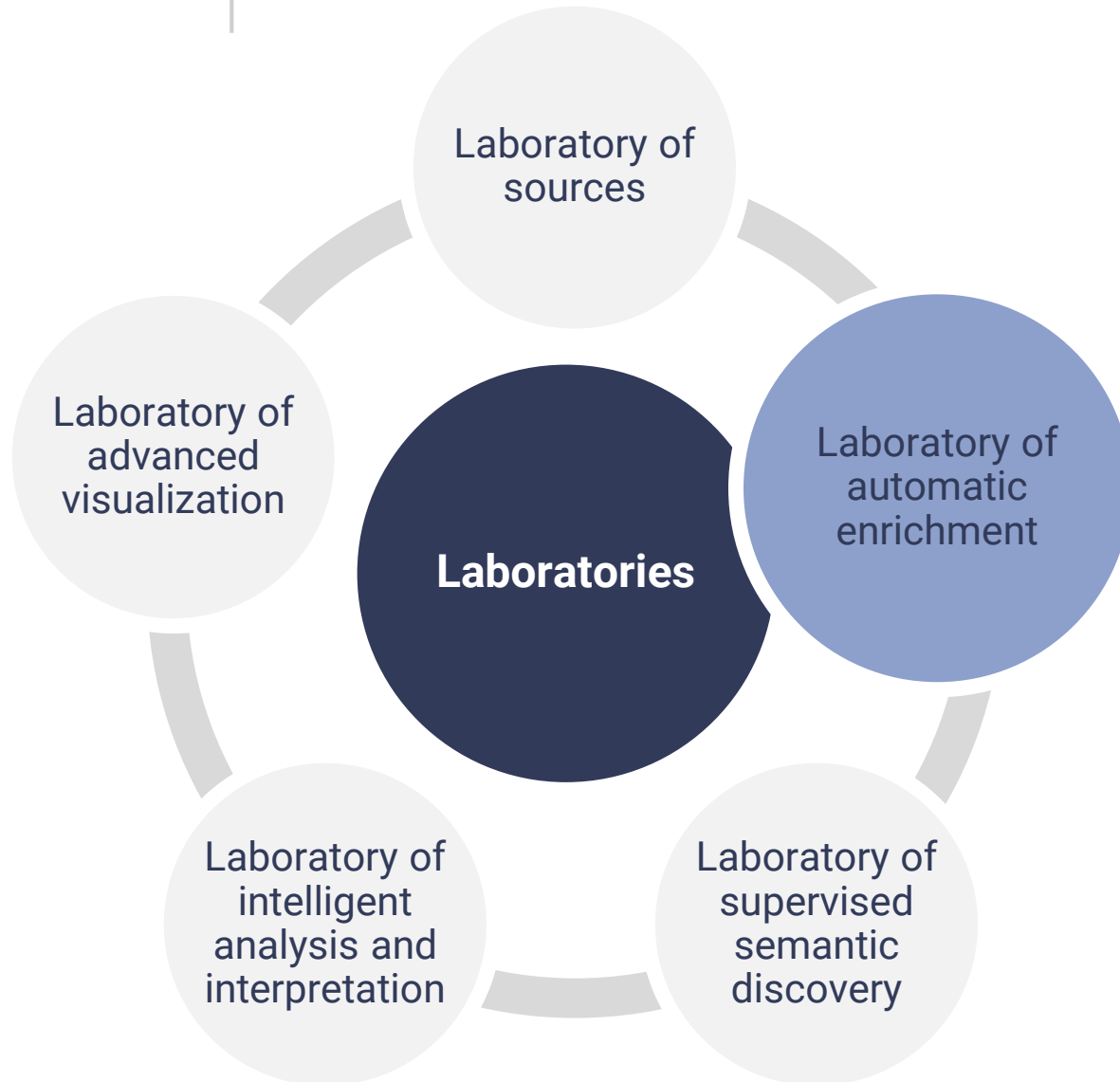
Software/services for:

- Text, voice and music recognition,
- Automated data classification,
- Transcription, transliteration, translation and annotation.

Laboratory of sources

Laboratory of automatic enrichment

Laboratories

Laboratory of advanced visualization

Laboratory of intelligent analysis and interpretation

Laboratory of supervised semantic discovery

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Software/services for:

- Data aggregation and consolidation,
- Dictionaries and thesauruses,
- Data mapping

Laboratory of sources

Laboratory of automatic enrichment

Laboratory of supervised semantic discovery

Laboratory of intelligent analysis and interpretation

Laboratory of advanced visualization

Laboratories
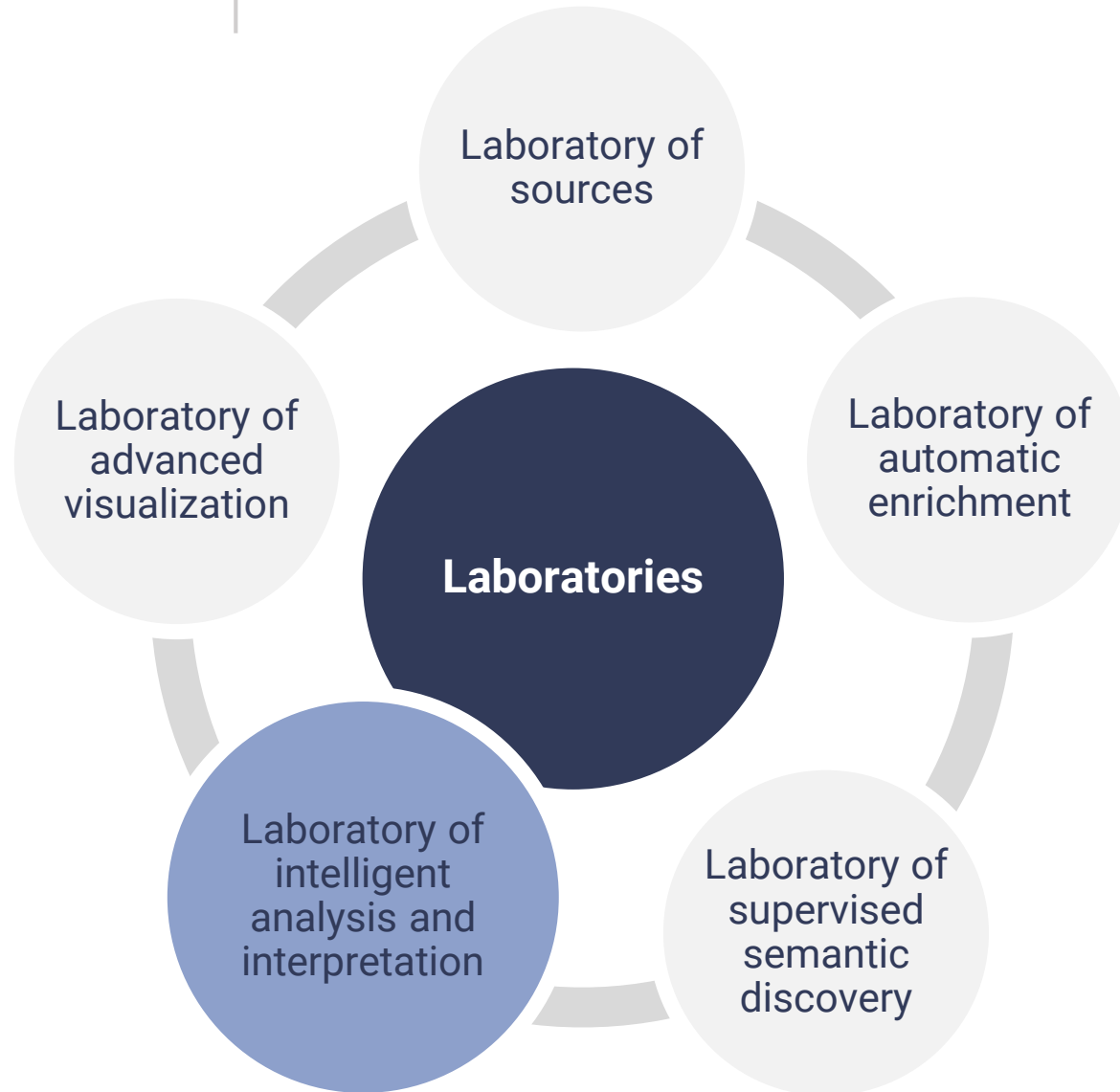
Software/services for:

- Interactive data analytics
- Music, speech and gesture perception

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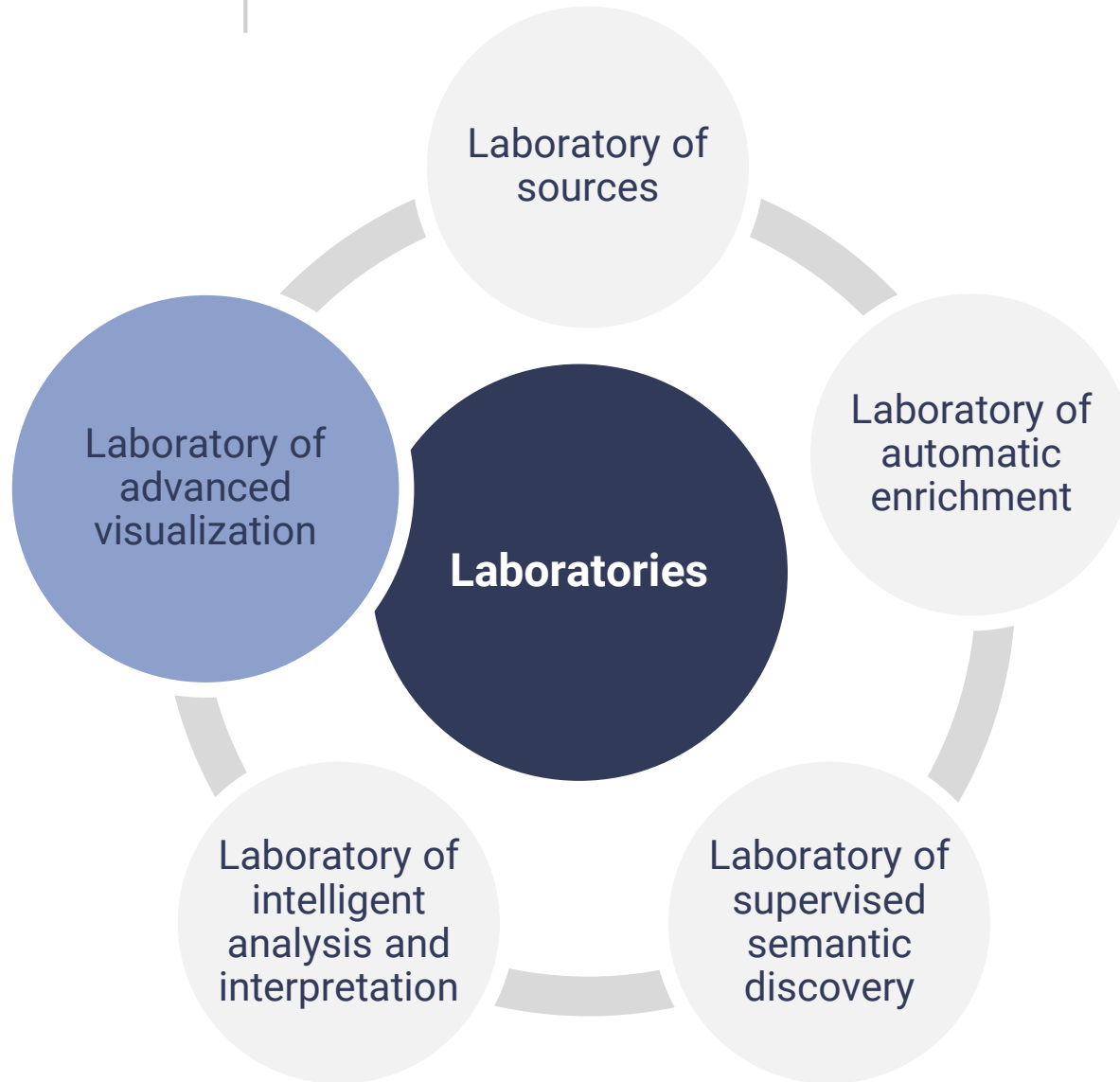
Equipment and software/services for:

- Large-format and 3D visualisation with 3D gaming engines support (e.g. 4K projectors, Unity, Unreal),
- Geospatial visualisation and physical visualisation (e.g. 3D printers).

Laboratory of sources

Laboratory of automatic enrichment

Laboratory of advanced visualization

Laboratories

Laboratory of intelligent analysis and interpretation

Laboratory of supervised semantic discovery

- Scenario-based analysis
- Complex infrastructure with a common single interface
- A set of interconnected services
- Mobile laboratories

- Digitization of various types of content:
  - Documents, scores, paintings, notes
  - Video (8K+, 360°, 3D, plenoptics)
  - Audio (multichannel, ambisonics)
  - Motion capture
  - 3D scanning
  - Georadars

    - Processing and enrichment data with additional layers and metadata

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Just a few examples of the infrastructure components from
The Laboratory of sources

Geology, archeology
- Georadars
- Spectrometers
- Geological mapping, photogrammetry
- European Centre for Geological Education (Univ. of Warsaw, Chęciny)

Photo sources: Univ. of Warsaw

Cultural heritage digitization

- A0+ format scanners
- Digital cameras - photography up to 150MPix, 100x140cm
- Negatives
- Infra-Red photography (e.g.pigment and blemish analysis of historical artefacts)
- 3D photography
- FADGI support

Photo sources: fujifilm-x.com, www.nationalphoto.co.jp, photography.phaseone.com, www.acc.com.pl, www.canon.pl

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Arts, historical photography
- Analog photography laboratory and studio
- Photo cameras (e.g. Chamonix 20x24")
- Darkroom with enlargers (up to 8x10")
- Support for nobles photography techniques (wet collodion, albumen, cyanotype)

Photo sources: www.chamonixviewcamera.com, Heiland, kaiser-fototechnik.de, svedovsky.com, linhof.com, PSNC
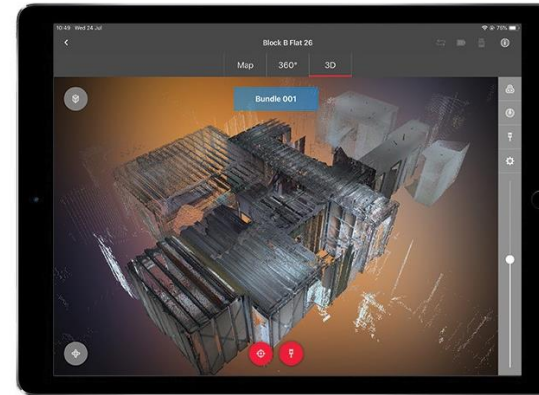
Cultural heritage, archeology
- LIDAR and structured light scanners
- Tripod-mounted and hand scanners
- Software for cleaning and processing 3D point clouds
- Drones for aerial scanning and photos
- Multispectral cameras for drones
- Aerial photogrammetry

Photo sources: www.einscan.com, leica-geosystems.com, www.dji.com

Culture (theatres, operas, events), etnology
- Multiple 12K cameras for fine quality recordings
- Postprocessing including HDR
- Multiple 8K@60p live cameras with live video streaming + mixing

Photo sources: www.blackmagicdesign.com, www.ioindustries.com, blog.frame.io,

Audio

Culture (concerts), musicology, etnology, linguistics

- Fine quality recordings and playback
- Multichannel sound, ambisonics
- Various physical setups of multiple audio sources
- Low-latency audio streaming (incl. LOLA)

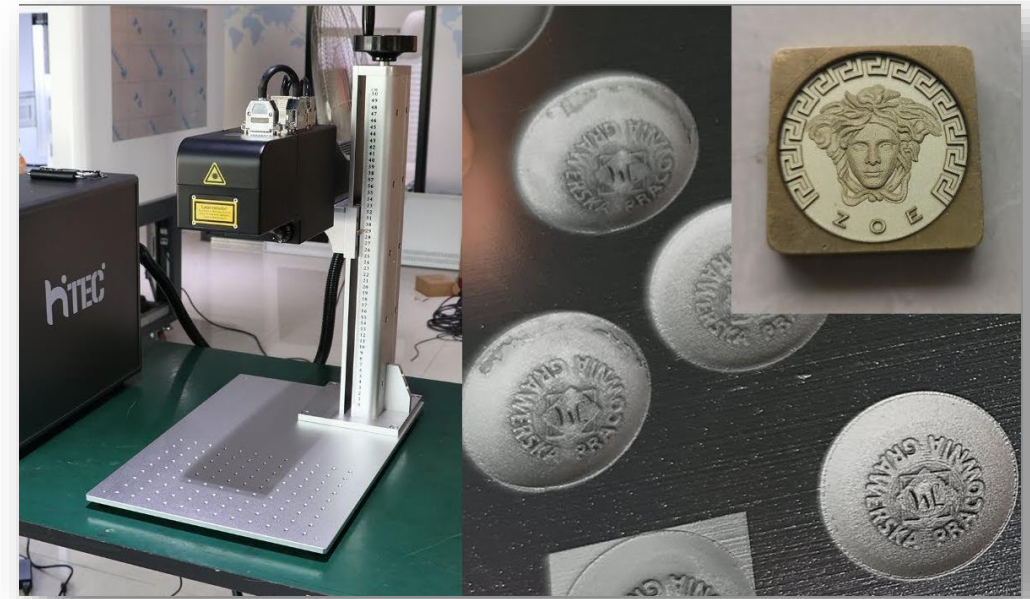Photo sources: PSNC, Adam Mickiewicz Univ. core-sound.com
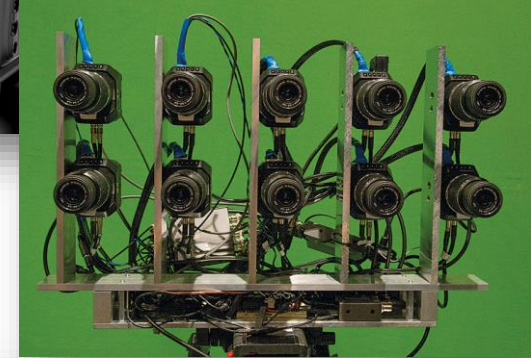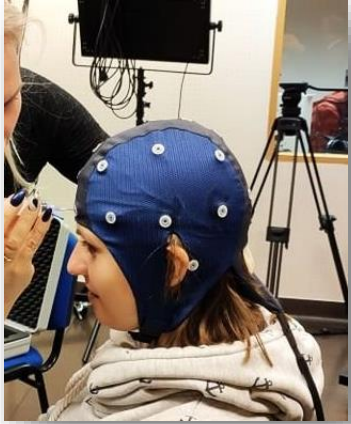
Culture, archeology, architecture, linguistics, ethnology
• Special formats: VR/360° video (up to 30K)
• Stereoscopy
• Plenoptics, and camera arrays for research, 6DoF
• Motion capture
• Sensors (biosensors, haptic, etc.)

Photo sources: vive.com, www.kandaovr.com, Fraunhofer IIS, www.cam-fi.com/, Adam Mickiewicz Univ., PSNC

Culture, Arts, Archeology
- Displays: 8K LED HDR walls, TVs
- Physical visualisation: 3D printers, laser
- Virtual galleries (renders, point cloud, paintings, VR)

Photo sources: www.etcentric.org, www.creatbot.com, 3dgence.com, www.hiteccnc.com

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Thank you!

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