



DEUTSCHES ZENTRUM ASTROPHYSIK

The German Center for Astrophysics

5th ChETEC-INFRA General Assembly, Dresden, 17. September 2025

THE DZA MISSION

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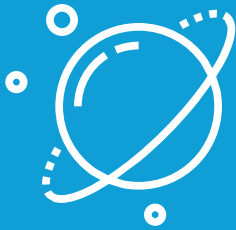
We have a lot on our plate:

We build a scientific **light house**, combining Research, Innovation and Transformation.

We face two challenges:

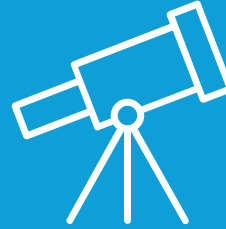
The big **questions of the Universe** and the **structural change in Lusatia**.





Astrophysics

Radio astronomy with the Square Kilometre Array Observatory (SKAO) up to **Gravitational Wave Astrophysics** with the Einstein Telescope



Technology Development

Center for the development of future astronomical experiments and development lab for industry



Data Sciences

Analysis of huge volumes of astrophysical data from all over the world up to AI-based and intelligent green data reduction

Center for Innovation & Transfer (ZIT)

Transformation Research

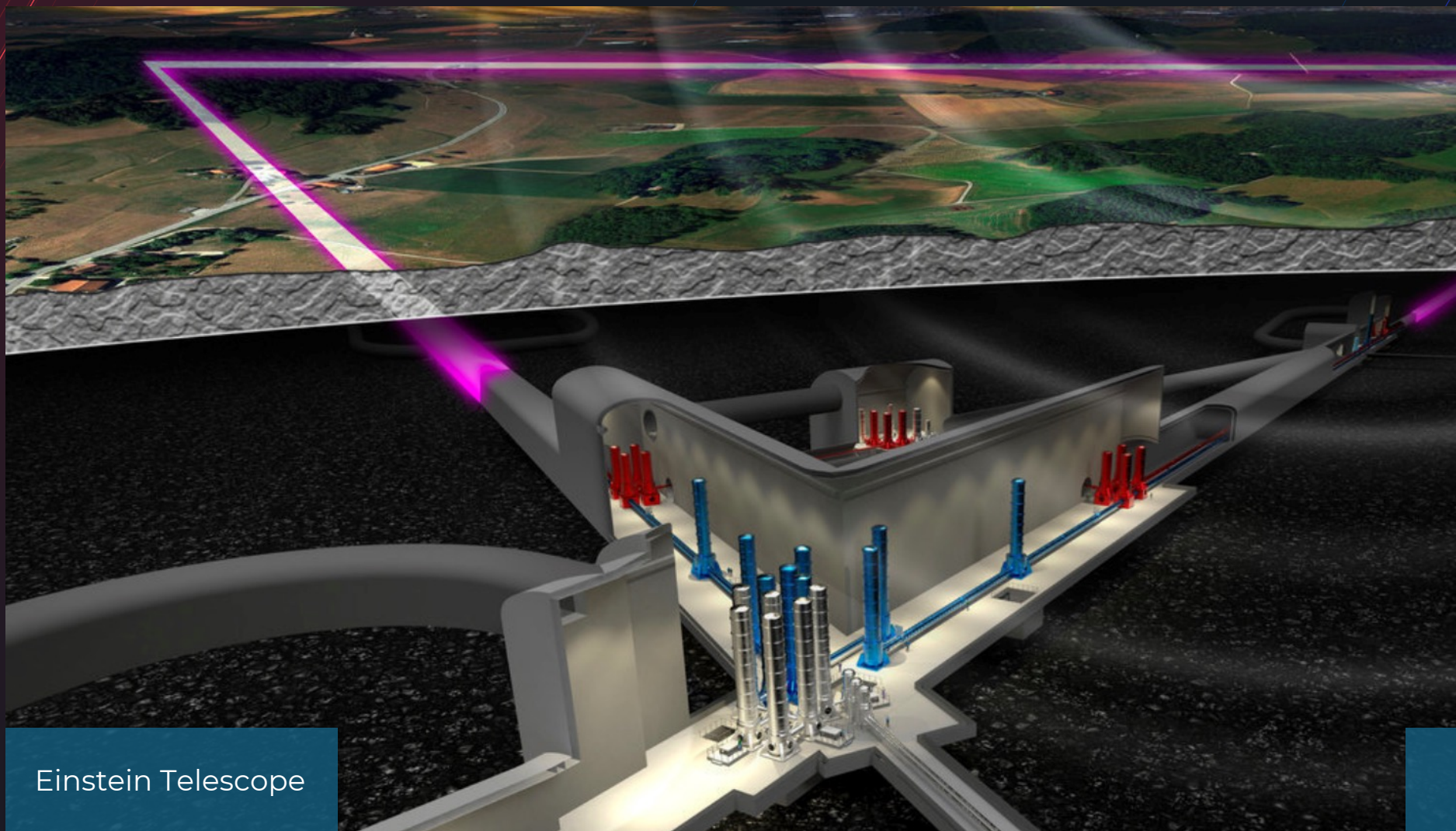
Smiling Face



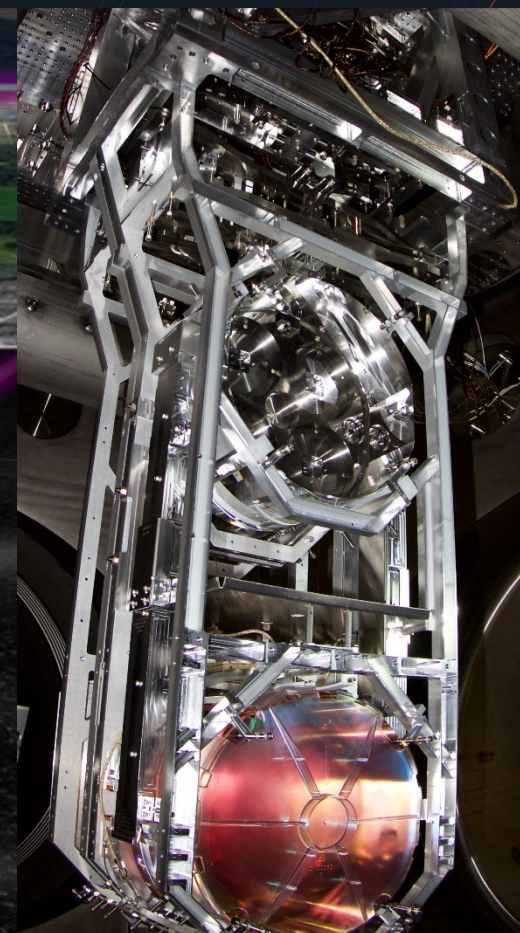
10 Centimeters

FUTURE GRAVITATIONAL WAVE DETECTORS

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Einstein Telescope



Silicon Mirror Technology

THE LOW SEISMIC LAB

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Innovation platform of ca. (40 x 30 x 30) m³ size in a depth of 200m in the Lusatia Granite

With a Square-Kilometer 3D seismic sensor array

- Large scale measurement validation of future seismic isolation concepts

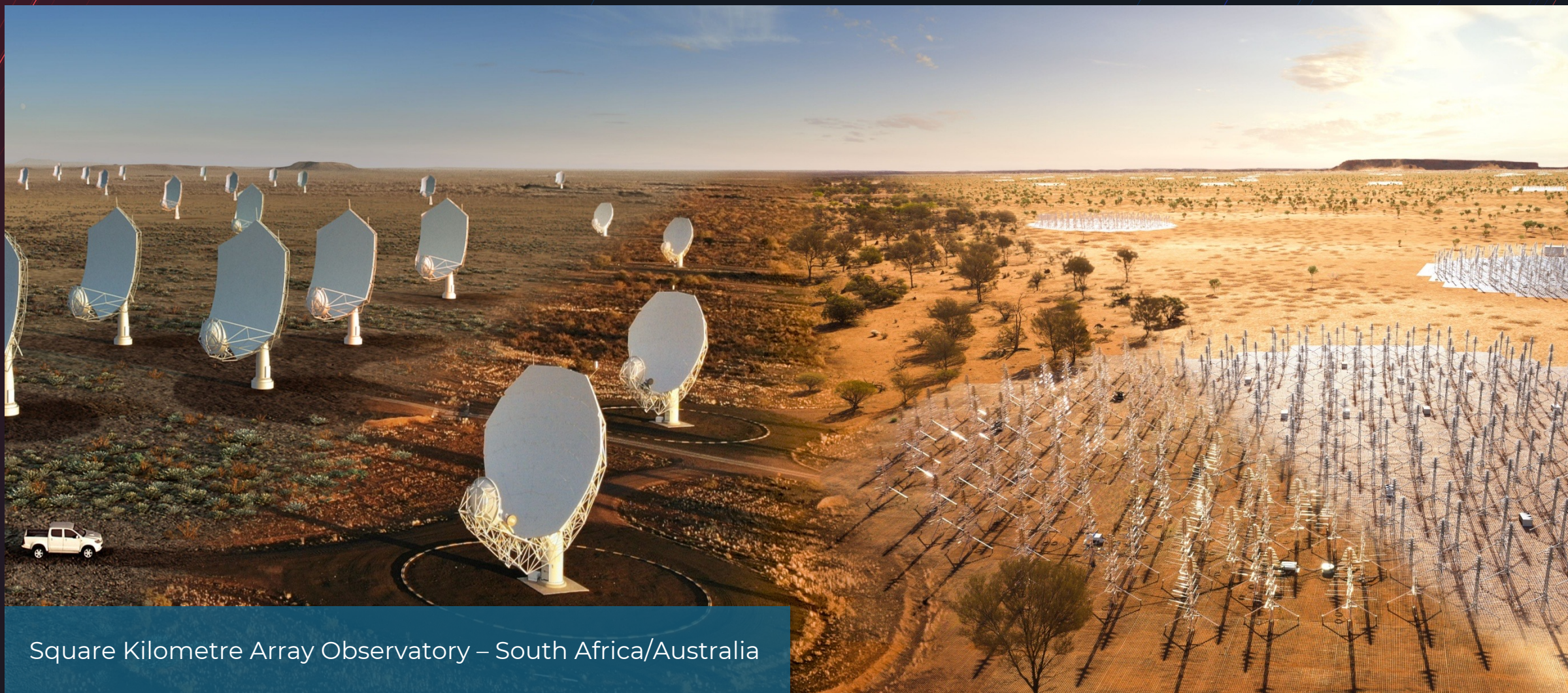
THE PLACE FOR FUTURE «DEEP TECH»:

- Technology development for gravitational wave astronomy
- Adaptive seismic noise suppression
- Subnanometer photolithographie
- Experiments for Quantum computing
- Accelerator Astrophysics (e.g. Felsenkeller)



FUTURE PROJECTS IN RADIO ASTRONOMY

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Square Kilometre Array Observatory – South Africa/Australia

FUTURE PROJECTS IN RADIO ASTRONOMY

Max-Planck MeerKAT Galactic Plane Survey

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First MeerKAT-Plus Antenna in South Africa



DSA 2000 in Nevada, USA



MPIfR Radio Receiver

SKAO SCIENCE MEETING IN GÖRLITZ

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Deutsches Zentrum für Astrophysik / Günther Hasinger, The German Center for Astrophysics, ChETEC-INFRA General Assembly, 17.9.2025



CENTER FOR TECHNOLOGY DEVELOPMENT

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New qCMOS
Detector

INNOVATIVE AI AND SMART GREEN COMPUTING

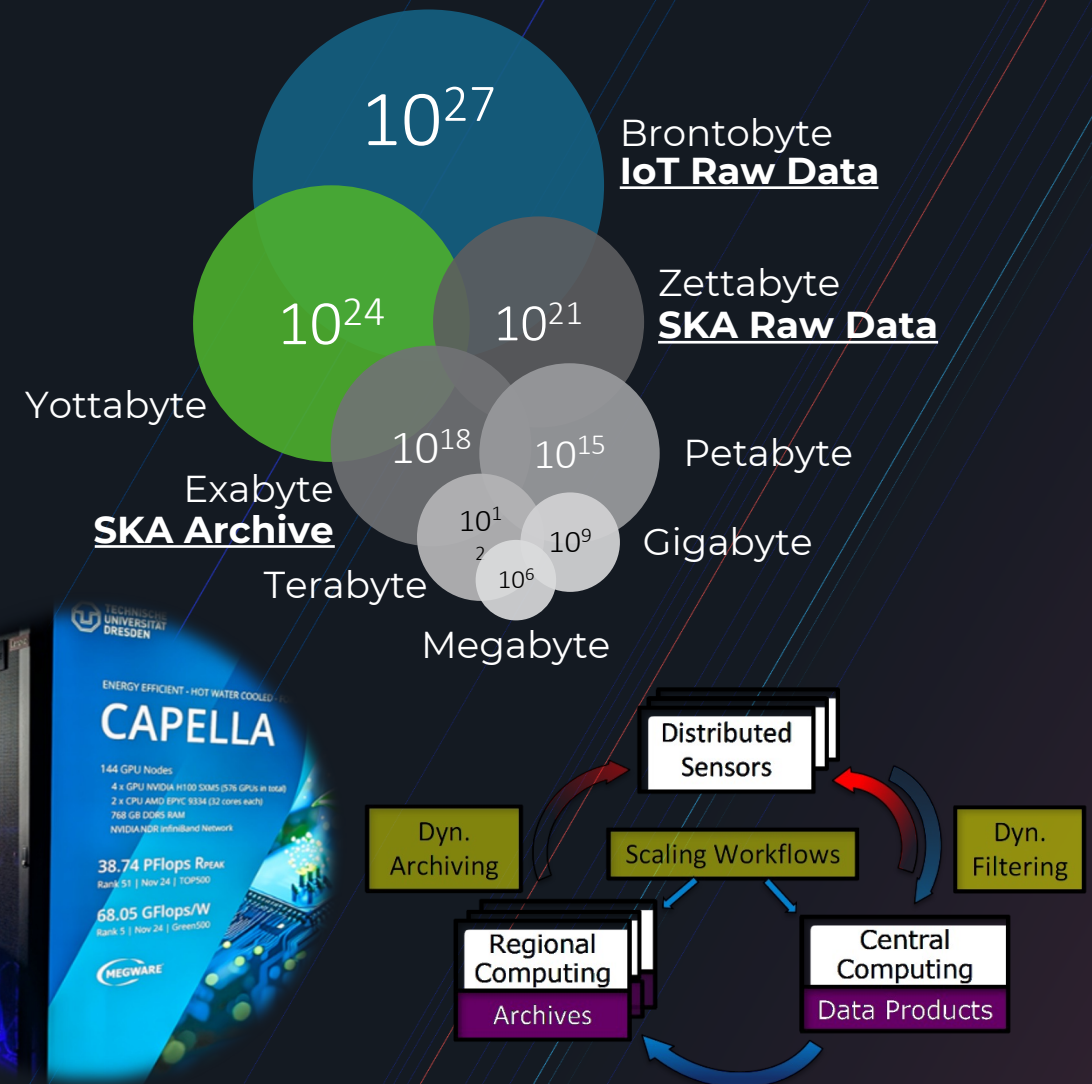
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Innovative AI-based methods

- Improved detection possibilities (knowledge graphs, ML)
- Filtering and storage (archive) as central topics
- Data Science and Computing as success drivers

Smart Green Computing

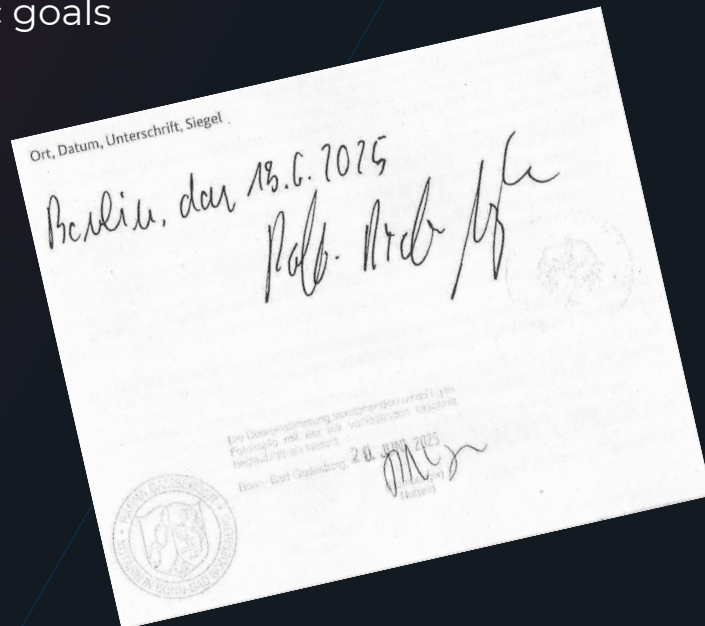
- Cooling with warm water and district heat connection
 - Energy-efficient hardware
 - Reduction of data irreversibility (online + offline)
 - **In 2030: ~ 20 % of the world wide power consumption for IT** [Nature, 2018]
- ➔ Contributions to quell energy hunger of IT



GOVERNANCE & ORGANISATION

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- Governance structure with clear responsibilities
- Establishing internal processes (procurement, communication, controlling)
- Transfer to DZA gGmbH
- Long-term financial planning until 2038 aligned with scientific goals



GOVERNANCE & ORGANISATION

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- 100 employees (August 2025)
- Gradual growth until 2038
- Strategies for recruiting, continuing education, leadership development
- Focus on diversity, balance, equal opportunities
- Science support personnel as strategic asset



FUTURE DZA-CAMPUS IN GÖRLITZ: KAHLBAUM AREA

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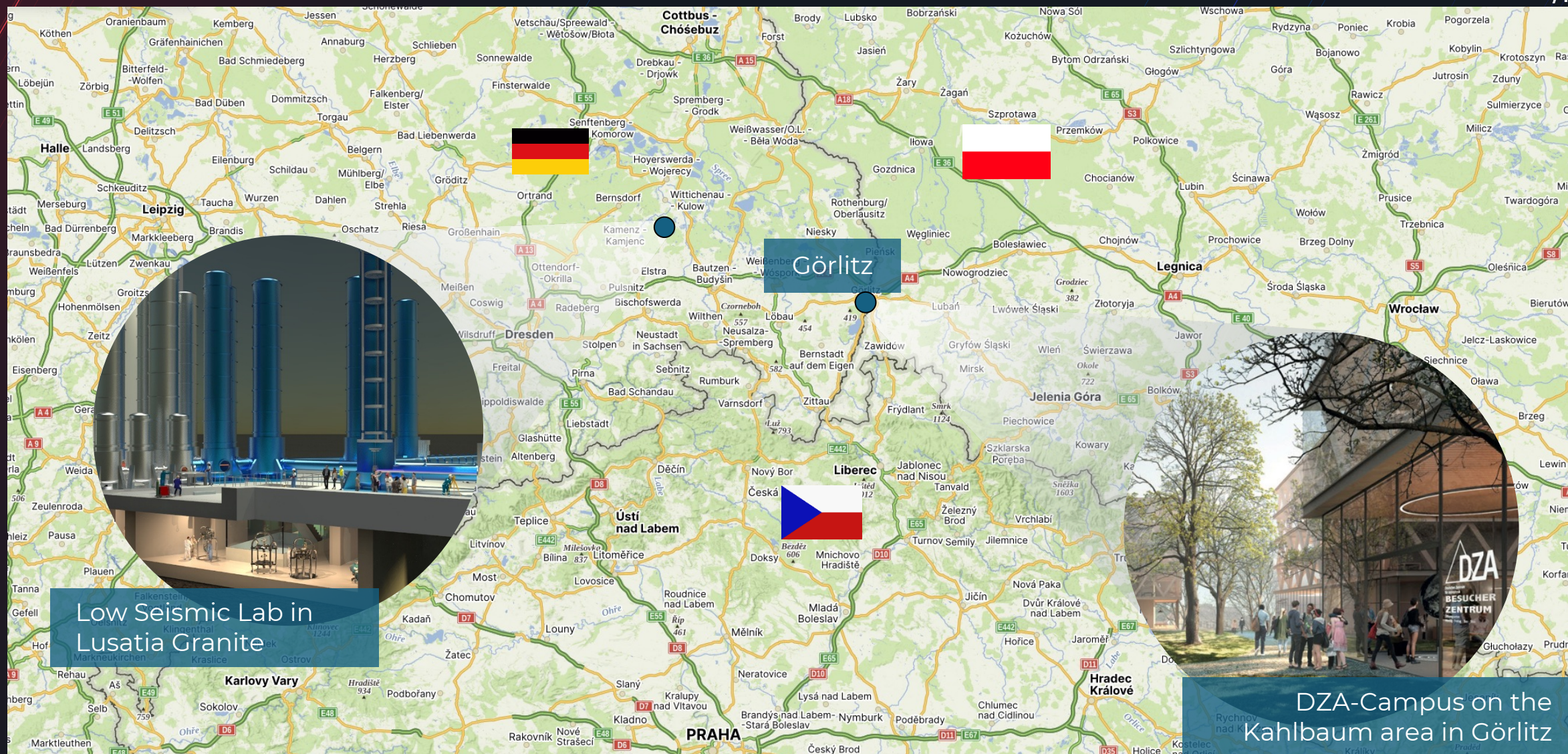
DEVELOPMENT AND USE OF A SAXONY DIGITAL TWIN: GÖRLITZ

LANDESAMT FÜR GEOBASISINFORMATION SACHSEN (GeoSN)



IN THE HEART OF EUROPE

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FOSTERING STRUCTURAL CHANGE IN LUSATIA

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Win-Win:

- A broad regional network and local support are the basis for DZA: transfer, promoting young talent, recruitment and employee support.
- We provide momentum for the regio and support sustainable structural change.
- We contribute to the development of a cross boarder science region.



Many Thanks!

guenther.hasinger@dzastro.de

www.deutscheszentrumastrophysik.de