

A new era. A new generation. The aerospace generation.

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Webinar Series: Education and Training in the Space Sector XIX

Theme: Young Space – When Children, Teenagers, and Young Adults Reach for the Stars

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**THE
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LÄND**



Baden-Württemberg

My Profile: From Research to Strategy

1. The Journey: From Enthusiast to European Ethnologist and Geographer

- **Early Inspiration:** Passion for aerospace ignited by family (Grandpa an engineer), technical projects, science magazines and science fiction (Star Trek, Stargate, Star Wars).
- **The "Pivot" in Studies:** The path did not lead me into rocket science
 - Began with Geophysics (KIT), fascinated at the time by the "Blue Dot" mission (A. Gerst).
 - Switched to Geography (JMU, B.A.) and European Ethnology / Folklore (JMU, B.A. & M.A.).
- **Areas of interest during my Master's studies:** Science and Technology Studies (STS), Multi-Species-Ethnography, Narration Research, Anthropology Beyond the Human and Extinction Studies.

2. The Master's Research: What Drives Young Talent?

- **Master's Research:** Ethnographic (Cultural & Social Studies) research at a student aerospace club.
- **Focus of the Study:**
 - How do they narrate and represent their experiences in this field?
 - Why do these students engage in spaceflight activities?
 - What do the relationships between students and technology look like within a student spaceflight context?

Key Insight: Gaining deep insights into the hopes, wishes, and culture of the next generation in the aerospace sector.

3. The Mission: From Analysis to Strategy

- **Current Role:** Project Employee at the **Baden-Württemberg Aerospace Strategy (THE aerospace LÄND)** | c/o LR BW e. V.
- **The Connection:** My work in some ways is the direct application of my master's research.
- **Largest project to date:** Mission Zukunft: on to new horizons



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Master's Research: What Inspires Young People

The Vision: Purpose and Values

- **Idealistic Narrative:** The main driver is an **idealistic space narrative**, where technical success is secondary to reflection on political, social, and ethical aspects.
- **Identity:** A strong **emotional attachment** to the activity that shapes identity and values (Pioneering Spirit).
- **Technology as a Network:** Technology is viewed as a dynamic, active part of a **human-machine network**, not just a simple tool.
- **Interdisciplinarity:** Aerospace is a holistic societal topic, **not limited to STEM** (creativity, social, and organisational aspects are central).

Community and Entry

- **Role of Clubs/Makerspaces:** Provide **bureaucracy-free spaces** and labs where practical technology and the **"Trial and Error"** principle are actively allowed.
- **Creating Meaning:** Commitment builds identity and offers **community, orientation**, and social rituals.
- **Knowledge Transfer: Mentoring** by experienced members and cross-generational teams ensure continuity and easy entry.
- **Low-Threshold Access:** Media such as **video games** ("Kerbal Space Program") and Sci-Fi events are important first points of contact.



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Master's Research: The Key Challenges and Barriers

The Biggest Barriers

- **The Factor of Space:** The **lack of long-term workshops, laboratories, and common rooms** is the most significant hurdle.
- **Bureaucratic Hurdles:** Administrative burdens (e.g., permits for weather balloons, prototype insurance) must be **significantly reduced**.
- **Access and Equality:** **Financial stability** and access to tools and technology form the base. Proactive support is needed for children/youth from financially difficult backgrounds.

Diversity and Culture

- **Inclusion as a Cornerstone:** Acceptance of **LGBTQIA+** and **Neurodiversity**, alongside a critical stance on the low proportion of women, are crucial for attraction.
- **Generational Values:** Values such as **diversity, gender equality, and respect** must be lived and promoted within the industry and organisations.
- **Reducing Hierarchies:** Genuine **cooperation at eye level** with universities/industry, which provides resources and fosters personal initiative, is essential.

Regional Distribution

- **Urban-Rural Divide:** Targeted promotion of technical associations and **overcoming the urban-rural gap** are necessary to reach young talent nationwide.



Mission Zukunft: on to new horizons

Organisation

- **Overarching Strategy:** Coordinated since 2023 under "**THE aerospace LÄND**" strategy (previously the Aerospace Forum Baden-Württemberg e. V.).
- **History:** Running since 2010 | 8th Edition in 2024/25 (previously titled: "Mission Zukunft: Von Baden-Württemberg ins All" | Mission Future: From Baden-Württemberg into Space).
- **Sponsors & Support:** Closely linked to the Baden-Württemberg Ministry of Economic Affairs and partners from industry, research, and associations.

Objectives

- **Talent Development:** Fostering enthusiasm for aerospace among children, adolescents, and young adults.
- **Strengthening BW Location:** Increasing the visibility of the aerospace hub and its diverse training pathways (academic, skilled trades, commercial).
- **Career Opportunities:** Direct networking between young talent and established industry and research stakeholders, highlighting career prospects.



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Mission Zukunft: on to new horizons

Core Structure & Process

- **Idea Competition:** A 6-month themed competition (STEM or Creative Content) based on a specific motto. 2024/25 motto: *“Extraterrestrial aircraft – when boundaries are broken”*.
- **Mentoring & Jury:** Projects are supervised and evaluated by experts from industry, politics, and research.
 - *Awards: Main Prize (1st-3rd Place), Special Prize for Creativity, Special Prize for Commitment.*
 - The prizes that can be won are visits to companies and research facilities or visits to players in the aerospace sector, which could also be a museum or planetarium.
- **Baden-Württemberg Aerospace Day:** Major finale event featuring the awards ceremony, a careers fair, exhibition, elevator-pitches by the project teams, specialist talks, and keynote speeches.

Outlook & Vision

- **Idea:** Expansion of the competition to include dedicated formats for university students and apprentices. Currently, only pupils from schools can take part in the idea competition.
- **Possible scaling:** Other German federal states (Bavaria) have expressed interest in the initiative.
- **Vision:** Establishing aerospace events in all federal states, leading to a nationwide German event or even a Europe-wide event.



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Building kits: Low-threshold access to technology

Early, Hands-On Foundations

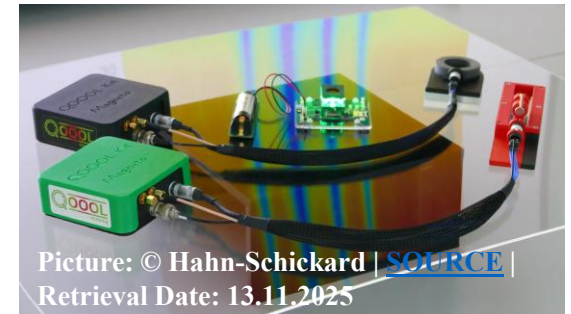
- **Essential Exposure:** Construction kits provide crucial early exposure to mechanics, electronics, and engineering principles.
- **Safe Space:** They enable hands-on learning, encouraging iteration and the vital principle of trial and error without fear of failure.
- **Mentorship Bridge:** Often facilitated by family or mentors (e.g., grandfather), turning theoretical concepts into engaging, shared projects.
- **Key Skill Building:** Fosters problem-solving skills, spatial reasoning, and technical literacy outside of formal schooling.

Illustrative Examples

- **Modern Initiatives from Baden-Württemberg and Germany:**
 - **ZUKUNFTSFLIEGER Kit:** (BDLI initiative) Offers practical aerospace experiences to kids.
 - **Qool-Kit:** THE aerospace LÄND Partner - Hahn-Schickard develops a hands-on experience in sensor technology through the development of an NV-magnetometer kit.
 - **Bionic Swift Experimental Kit:** (FESTO initiative) Festo has developed a kit for a bionic flying device as part of Bionics4Education



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Reskilling and upskilling measures from Baden-Württemberg

1. About the programme „Aerospace Engineering“

- a) The programme is a cross-sector re-skilling and upskilling initiative in aerospace technology developed on behalf of the Baden-Württemberg Ministry of Science, Research and the Arts (MWK).
- b) Organisers: Karlsruhe University of Applied Sciences (H-Ka), University of Stuttgart, University of Ulm.
- c) Objective: Targeted qualification of skilled workers for entry into and advancement in the aerospace industry.
- d) Format: Modular, part-time, classroom-based with optional online access. In-house solutions are also possible.

2. Recommended modules

- a) Introduction to Space Travel – Fundamentals of Spacecraft Technology
- b) Aerospace Systems Engineering
- c) Aerospace Sensors – Radar
- d) Aerospace Software Engineering

3. Target group and requirements

- a) The programme is aimed at technical professionals seeking professional specialisation or reorientation.
- b) Admission: Bachelor's degree or higher, or master craftsman or technician qualification.
- c) Cost: €15,800 for all courses, €3,950 per module. Costs must be covered by companies or privately.
- d) Duration: 7 days per module; 28 sessions in total

4. Relevance and qualifications

- a) The programme is a strategic response to the shortage of skilled workers in the aerospace industry, particularly in the context of changes in traditional engineering sectors (e.g. the automotive industry in Baden-Württemberg).
- b) Qualifications: Certificates of attendance (without examination), certificates (with examination), Diploma of Advanced Studies (DAS) upon completion of all modules.
- c) Recognition: Awarding of ECTS credits.



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Further information: <https://www.h-ka.de/iww/aerospace-engineering/ueberblick>

Thank you for your interest!



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