Boreas Ethics Statement

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The project in brief

Boreas investigates a digital design and manufacturing pipeline that automatically derives customised aircraft designs from user-defined requirements, combining electronics, aerodynamics and control. **The primary product is this engineering pipeline, not the drone:** a conventional X-configuration quadrotor interceptor serves as a defined case study to evaluate the methodology. Physical interception was chosen for methodological reasons, not because collision-based interception is considered universally appropriate; the methods are transferable to other platforms, including capture and net drones. Boreas is not a commercial product; it gives future engineers the opportunity to develop technical skills and gain work experience.

Our ethical position

The underlying engineering methods are inherently dual-use. The more relevant question is the **degree of practical enablement** created by automation: public drone information exists, but integrating it takes substantial effort. Boreas could reduce that effort – which is both the scientific value of the project and its principal ethical concern.

Our conclusion The scientific methodology may be made transparent. The immediate automation of a deployable design is not published without further review and appropriate restrictions.

Seven guidelines that apply to the project

1. **Transferability:** The pipeline remains applicable to other platforms, including capture and net drones.
2. **No Weapons:** Autonomous target selection, engagement without human authorisation, weapons, and explosive payloads remain outside the project.
3. **Responsible publication:** Methodology and general findings may be published openly; directly deployable implementations undergo separate review.
4. **Information security:** Sensitive technical information and other enabling materials are protected against unauthorised access or disclosure.
5. **Responsible collaboration:** External collaboration is possible if information sharing stays proportionate to the jointly defined scope.
6. **Project-associated personnel:** Everyone with substantial access to sensitive information follows the Statement and relevant ETH rules; additional checks may apply to external personnel.
7. **Human responsibility:** The pipeline supports engineering decisions but makes no operational or societal decisions concerning actual interception.

What this means for collaboration partners

Source code, configuration and design files, documentation, datasets and specifications that substantially reduce engineering effort are protected independently of sponsorship or other affiliations. Collaboration with third parties is possible within a clearly defined scope; in case of doubt, the ETH Ethics Commission is consulted. All Focus students commit to the Statement, general standards of scientific integrity and the ETH Code of Conduct. The same applies to all Project-Associated Personnel – ETH students and employees, freelancers, contractors and other third parties with relevant access to sensitive technical information.

Governance and continuity

After the Focus project, the results transition to the PDZ Laboratory. Prof. Mirko Meboldt, Head of the PDZ Laboratory at ETH Zurich, endorses the Statement and confirms his commitment to upholding its principles in the subsequent handling of the results, also in consultation with the ETH Ethics Commission. Responsible research and publication is a continuing responsibility, not a one-time assessment.