DARE25-064 - CrowdSky: Building a Global Citizen-Science Data Portal for Time-Domain Astronomy

Zusammenfassung

CrowdSky seizes a remarkable new opportunity in modern astronomy: the emergence of a vast, global, and largely untapped stream of homogeneous time-domain data produced every night by tens of thousands of mass-market smart telescopes in the hands of amateur astronomers. These compact, automated instruments—now deployed across every continent - collectively generate sky coverage and cadence that rival billion-euro facilities such as the Vera C. Rubin Observatory. For the first time, the astronomical community has the chance to access continuous, worldwide optical monitoring at a scale never before achievable.

CrowdSky is designed to unlock this potential.

We will develop a minimum, yet sustainable, viable product for the CrowdSky Data Platform: (1) a robust bulk-data archive built on the existing and thoroughly stress-tested AstroWISE system, capable of ingesting and serving standardised 10-minute stacked observations at scale; (2) a science-metrics database optimised for time-domain parameters such as light curves, astrometric shifts, and transient signatures; and (3) a visualisation layer to explore the rapidly growing temporal and spatial sky coverage. A dedicated desktop client will allow users to pre-process and upload data seamlessly.

By combining Vienna's data reduction and software pipeline expertise with Groningen's mature AstroWISE archive infrastructure, CrowdSky requires only targeted "glue-code" development to become a fully operational, globally accessible time-domain engine. The outcome is transformative: a new scientific asset that channels worldwide citizen observations into professional astrophysics and planetary defence, complements large survey telescopes, offers pre-alert insights into transient events, and strengthens the monitoring of satellites, debris, and near-Earth objects. CrowdSky turns a global hobby into a coordinated, distributed observatory.

Wissenschaftliche Disziplinen:
Astronomy (50%) | Time series analysis (25%) | Data mining (25%)

Keywords:
Time-Domain AstronomyCitizen ScienceAll-sky surveySmart-telescopesData collectionData miningImage / Data processing pipelines

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Weiterführende Links zu den beteiligten Personen und zum Projekt finden Sie unter
https://www.wwtf.at/funding/programmes/ei/DARE25-064/