

# Accurate PROJ Parametrization of the Uniform National Projection System of Hungary (EOV)

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## SUMMARY

We propose a new set of PROJ parameters for the definition of the Uniform National Projection System of Hungary (EOV) in GIS environments.

The EOV projection is an oblique Mercator map projection system, with two projection steps: first from the ellipsoid to a Gaussian sphere and secondly from the sphere to the cylinder. The projection in GIS applications is normally defined as a single step Hotine (or Swiss) Oblique Mercator projection with proper parametrization. However, this solution introduces a 1.5 mm average error due to the limitations of Swiss Oblique Mercator projection definition: the normal latitude of the ellipsoid (where linear distortion is minimal) and the latitude of the projection center (where the cylinder fits to the sphere) cannot be defined independently.

The concept of „transformation pipelines” started with PROJ 5.0.0 enabled us to define EOV projection in two steps (according to the official technical standard) eliminating this 1.5 mm error and enabling the PROJ definition to precisely fit to the standardized official solution.

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