

# Implementasi Pendekatan Geospatial Intelligence dalam Patroli Pengamanan Perbatasan Negara Republik Indonesia-Malaysia Wilayah Nunukan Kalimantan Utara = Implementation of the Geospatial Intelligence Approach in the Patrol of the Border Security of the Republic of Indonesia-Malaysia in the Nunukan Region of North Kalimantan

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## Abstrak

Perbatasan negara juga merupakan boundary dan frontier, yang memiliki nilai strategis bagi kedaulatan negara. Pengelolaan perbatasan negara harus didukung oleh ketahanan nasional yang tangguh untuk menghadapi ancaman, tantangan, hambatan dan gangguan. Salah satu bentuk dukungan nyata berupa patroli pengamanan perbatasan negara secara intensif. Sehingga, perlu adanya perencanaan yang efektif dalam meminimalisir tingkat risiko di lapangan. Sistem Informasi Geografis memberikan solusi fungsi analisis medan secara otomatis. Analisis medan mampu menilai tingkat risiko patroli pengamanan berdasarkan kriteria geografi militer. Penelitian ini menggunakan model Applied Research yang bersifat kualitatif dan kuantitatif (mixed method). Penilaian awal terhadap perbandingan 3 pendekatan intelijen (GeoInt, Humint, Osint) bersifat kualitatif. Pengumpulan data melalui kuesioner terhadap 33 prajurit TNI AD aktif. Adapun, implementasi Geospatial Intelligence bersifat kualitatif dengan metode Spatial Multi Criteria Evaluation (SMCE). Sumber data berasal dari geodatabase milik BIG (Demnas, Hidrologi), DITTOPAD (Peta Topografi), Kementan (Data vektor jenis tanah) dan ESA (Citra Satelit Sentinel-2A). Hasil penelitian menunjukkan tingkat risiko tertinggi merupakan ancaman musuh dengan persentase 44,1 % dan terendah karena adanya hambatan vegetasi yang rapat dengan persentase 7,2 %. Penelitian ini juga menghasilkan Peta Rekomendasi Rute Patroli yang memiliki tingkat risiko yang rendah berdasarkan klasifikasi standar NATO (Go, Slow Go, dan No Go).

.....National borders are also boundaries and frontiers, which have strategic value for the country's sovereignty. A robust national resilience must support national borders' management to face threats, challenges, obstacles, and disturbances. One form of real support is in the form of intensive patrols to protect the national border. Thus, it is necessary to have adequate planning in minimizing the level of risk in the field. Geographical Information System provides solutions for automatic terrain analysis functions. Field analysis can assess the level of risk of security patrols based on military geography criteria. This study uses an Applied Research model that is qualitative and quantitative (mixed method). The initial assessment of the comparison of 3 intelligence approaches (GeoInt, Humint, Osint) is qualitative. Data collection through questionnaires to 33 active TNI AD soldiers. Meanwhile, Geospatial Intelligence's implementation is qualitative with the Spatial Multi-Criteria Evaluation (SMCE) method. Data sources come from the geodatabase belonging to BIG (Demnas, Hydrology), DITTOPAD (Topographic Map), Ministry of Agriculture (Soil Type), and ESA (Sentinel-2A). The results showed that the highest level of risk was an enemy threat with a percentage of 44.1%, and the lowest was due to dense vegetation barriers with a percentage of 7.2%. This research also produced a Patrol Route Recommendation Map with a low-risk level based on the standard NATO classification.