

# Pengembangan Sistem Berbasis Event-Driven Architecture dengan Pengujian Berbasis Chaos Engineering: Studi Kasus Layanan Registrasi Isian Rencana Studi (IRS) pada Sistem Informasi Akademik = Development of Event-Driven Architecture Based System and Experimentation with Chaos Engineering Approach: A Case Study of Course Plan Registration Service on Academic Information System

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## Abstrak

Fokus utama penelitian ini adalah merancang dan mengembangkan prototipe sistem registrasi IRS berbasis event-driven architecture serta mengevaluasi sistem tersebut dengan eksperimen chaos engineering. Implementasi sistem menggunakan Spring Boot framework, Apache Kafka sebagai event broker, dan Amazon Web Service (AWS) untuk infrastruktur. Pengujian dilakukan dengan melakukan API testing untuk menguji fungsionalitas sistem dan load testing untuk menguji reliability sistem. Terakhir, eksperimen chaos engineering dengan metode chaos monkey dilakukan untuk menguji resilience sistem. Hasil pengujian menunjukkan bahwa fungsionalitas sistem sebagai layanan IRS bekerja dengan baik. Sistem dapat tetap bekerja di bawah tekanan 40.000 mahasiswa yang disimulasikan mengakses sistem bersamaan. Pada kondisi chaos di mana beberapa server dimatikan, sistem masih dapat berfungsi dengan baik dan mahasiswa masih dapat menggunakan layanan registrasi IRS tanpa masalah.

.....The main focus of this research is to design and develop a prototype of an event-driven architecture based course registration service, and to evaluate the system with chaos engineering. The system was implemented using Spring Boot as its framework, Apache Kafka as the event broker, and Amazon Web Service (AWS) for infrastructure. The testing was done by implementing API testing for evaluating the system's functionality and load testing to evaluate system's reliability. Finally, a chaos engineering experiment was carried out to evaluate the resilience of the system. The result shows that the system can deliver its functionality as a course plan registry pretty well. The system was able to work under the pressure of 40.000 student simulated to access the system simultaneously. In the chaos condition where several server were taken down, the system still performs well and able to provide the service without any problem for the students.