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Lab Reporting System

Client

World's leading construction and mining equipment, diesel and natural gas engines, industrial turbines and diesel-electric locomotives manufacturer.

Business challenge

The main application, Lab Reporting System (LRS), for managing lab tests was unable to keep up with increasing numbers of users and security requirements:

- The process required related tests to be stored together, causing the system's legacy architecture to be unresponsive

- System had limitations handling multiple users accessing the same record as it did not support simultaneous edits

- The lab samples records were highly confidential information and lacked an adequate security framework to handle compliance to security clearance at users access level

Approach

ThoughtFocus conducted a system architecture and design re-engineering to discover and fix the issues affecting application performance. We worked with security teams, understanding constraints and modeling data access and encryption requirements to meet compliance requirements:

- Targeted critical bottlenecks, achieving quick performance gains

- Redesigned application architecture using the latest technology stacks

- Changed data querying and rendering mechanisms, allowing for faster data throughput

- Implemented data level encryptions for better security and control

- Implemented activity logging, increased traceability
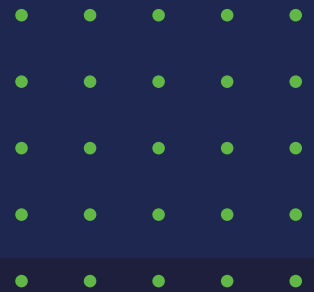
Results

The lab management cleared all internal security audits and reduced organization risk. One of unintended benefits of re-engineering - the application's human computer interaction index improved ten-fold:

- A built-in concurrency for multiple users to work simultaneously was developed, reducing the average wait time by over five hours

- New multi-lab support functions enabled technicians to access lab reports from other labs

- Highly secure application with role based security with alerting mechanisms in case of access intrusion

Business benefits

- Increased resources productivity output by concurrency

- Faster, durable, and scalable system

- More control to red data owners on data confidentiality

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