

High Reliability and Safety for Medical Devices and Health IT

Cost Effective Solutions for Quality Assurance

Within organizations more information technology (IT) systems and medical devices are becoming interconnected. Clinicians are increasingly relying on these systems for information, clinical orders, and decision support. Each of these increases the risk to the delivery of high quality and safe health care. Aversan manages, assesses, and mitigates the risks associated with medical device and health IT deployments.

www.aversan.com



Putting eSafety First

Both health delivery organizations and digital health vendors need to ensure quality and safety for mission critical health IT systems, Aversan offers independent and automated quality assurance and testing services:

Quality Management System Implementation

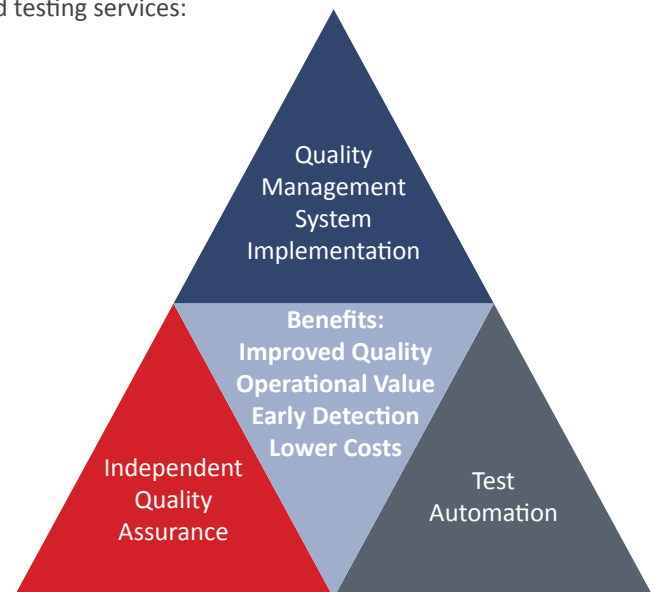
- ✓ Effectively manage change
- ✓ Objective evidence for compliance
- ✓ Reliable metrics for project decisions
- ✓ Instill consistent development practices
- ✓ Increased traceability

Independent Quality Assurance

- ✓ Technical testing with subject matter expertise
- ✓ Managerial independence for planning and reporting
- ✓ Financial independence for the quality budget

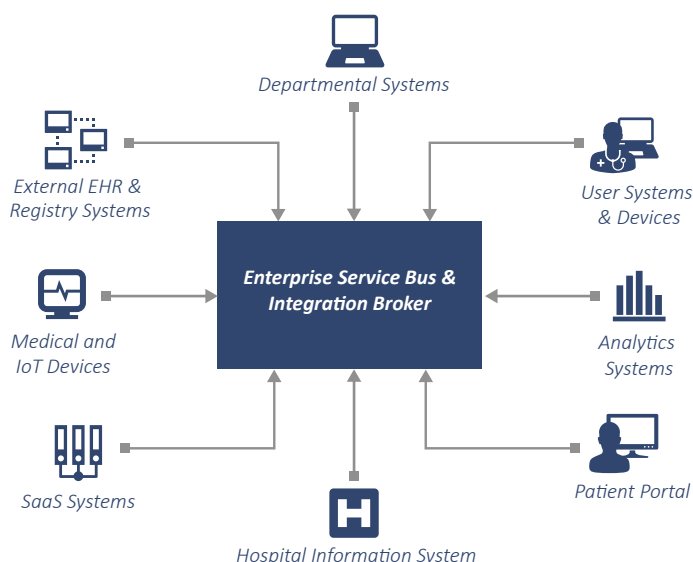
Test Automation

- ✓ Repeatability to validate every build and release
- ✓ Increased test coverage
- ✓ Increased ability to identify unintended changes
- ✓ Automate retention of test results



Do you have the programs and tools in place to mitigate risks in the delivery of Health Technology, otherwise known as eSafety?

Services supporting a typical hospital HIT environment



› Departmental Systems

› External EHR & Registry Systems
 Message transformation for normalization to a common standard: message generation, conversion and verification for HL7 V2, HL7 V3, FHIR.

› Medical and IoT Devices

Automated testing between devices and EMRs:
 - System integration
 - Conformance and interoperability
 - Data validation
 - Cybersecurity testing

› SaaS Systems

Validate APIs to common and shared software services:
 - Functionality
 - Compatibility
 - Performance
 - Security

› Enterprise Service Bus & Integration Broker

Validate business process logic of inter-system interactions.

› Hospital Information System

› Patient Portal
 › Analytics Systems
 › User Systems & Devices

Automated testing of systems:
 - Configuration validation
 - Data validation
 - Business rules validation
 - Browser compatibility testing
 - Performance, stress and load testing

› Quality Management and Consulting:

- eSafety maturity assessment
 - Test process maturity evaluation
 - Test strategy and roadmap
 - Test planning, execution and reporting
 - Test data generation and management
 - Enterprise automated regression testing

See the full list of services:
www.aversan.com/digital-health



Why Testing as a Service?

Centre of Excellence (CoE):

Strategic assets (people, processes and technology) that help you minimize the development, maintenance, and operations cost and maximize the ROI.

Value Adds

- ✓ **Faster release time with 24/7 automation** execution without manual intervention.
- ✓ Be confident with a **defect removal efficiency of 97%** and above.
- ✓ **Early defect detection** through requirement inspection and static testing.
- ✓ **High reliability** with standardization of processes, tools, test effectiveness and test efficiency.
- ✓ **Save 15-30%** on subsequent projects **with reusable test components**.
- ✓ **Faster time to market** with test process improvements in test strategy & planning, automation, test case optimization, and test management.

Project Spotlight iEHR and PLIS Quality Assurance and Release Management

Aversan, contracted by Oracle since 2008, provides Quality Assurance and Release Management services for British Columbia's Interoperable Electronics Health Record (iEHR) and Provincial Laboratory Information System (PLIS). The role of Aversan is to ensure that the system meets the quality goals specified by the B.C. Ministry of Health and Oracle.

Aversan created a sophisticated Automated Test Framework (ATF), simulating and testing multiple user interfaces, high transaction volume web-services and APIs. ATF tests are designed to test different aspects of the application including the functionality of Health Information Access Layer (HIAL), transforming lab data from HL7v2.X to HL7v3 for storage and retrieval, interacting with provincial Client Registry and Provider Registry, subscription services, and disclosure (consent) directives. This provides a substantial savings in cost and time in performing regression tests, allowing the full suite of test cases to be run in hours.

[Download the full case study](#)

Project Spotlight Health System Management Application

Project Background: A client with an existing manual testing campaign of over 10,000 tests, could not run a full regression in every release due to the amount of time it required. They only ran a subset regularly. This decreased their chances of detecting unintended errors in the system, and jeopardized the solution quality over time. This is a common problem faced by many legacy systems.

Aversan Approach:

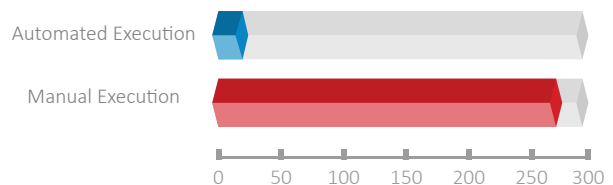
Aversan **automated a subset of 270** selected test cases. The automated test cases investment was **four weeks, with two full-time employees**.

Results:

Aversan **decreased the test execution time by 95%** and increased the number of errors caught. A return-on-investment in the tools was realized after five regression test cycles.

Automated: **15 hours to run regression (overnight)**

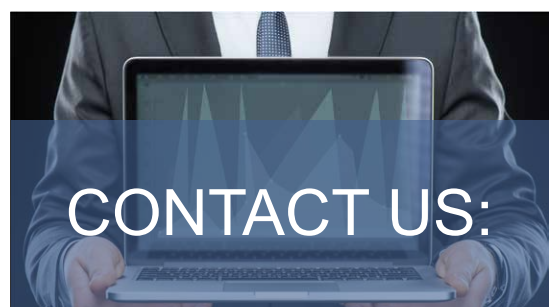
Manual: **300 hours to run regression (business hours)**



[Read the full case study and others:
www.aversan.com/resources](http://www.aversan.com/resources)

The Aversan Way Trusted experts that go the extra mile

- ✓ **Customer-Centric Flexibility:** Nimble, customizable teams quickly ramp to support specialized needs
- ✓ **Continual Risk Assessments:** Constant evaluation of technical, regulatory and human capital risk
- ✓ **Test-Driven Design and Development:** Specific focus on test driven design to ensure high reliability products
- ✓ **Agile Engineering Practices:** Smart, requirements-based engineering, and adherence to six sigma design methodologies
- ✓ **Compliance Expertise:** Navigating compliance and security protocols while adhering to industry regulations



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