

Engineering Services

- Model-based development
- Software quality improvement
- Development process creation
- Unit test service
- Functional safety support
- Secure coding support



Provide quality engineering services based on current market needs and requirements

GAIO as a tool vendor maintains an understanding of current industry development methods and techniques through regular market research. Also, through regular business activities, GAIO has an understanding of customer needs and market trends domestic and abroad.

This enables us to provide solutions optimized for our customer's development processes, methods and tools in order to satisfy safety, security and quality requirements.

Provide software quality improvement solutions

We provide an efficient unit test service based on our experience with software development tool technologies such as cross-compiling, unit testing and system simulation. We also propose improvements for customer software design and programming processes. Furthermore, we can provide solutions to improve customer software quality using our established test operation procedure methods.

Process creation and tool installation solution for MBD and MDD

Currently MBD using MATLAB/Simulink models has become a focal point in automotive embedded system design. Meanwhile, MDD using UML (Unified Modeling Language) or ADL (Architecture Description Language) is emerging as a means for implementing and testing application software. GAIO provides support services for establishing quality development processes and efficient tool introduction to meet the needs of the industry.

Offer high quality test services as required by functional safety standard ISO 26262

We provide high quality embedded software unit test services to satisfy automotive functional safety standards such as ISO 26262 and IEC 61508. In this field our knowledge and experience of functional safety related requirements and certification provides added value to our customers.

We maintain a network of Japan and offshore based partners as a resource for providing flexible and quick engineering services.

Trends/Keywords

- Safety/Security
- AUTOSAR
- MBD/MBT/MBC
- Next generation CI
- Sensors & Cloud
- E/E
- Multi-Core
- Safety Concept Notation
- Revised ISO26262

Practical skills usable in the workplace

Field experience

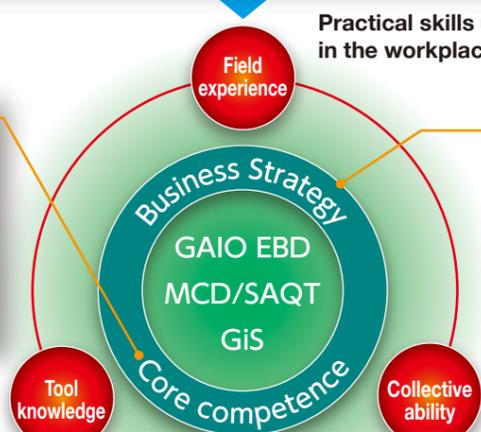
Core Knowledge

Long experience with Processors and Software:

- Tool Development for more than 50 cores, 500 series
- Compilers for more than 40 cores
- Simulators for more than 50 cores
- Powerful tools used worldwide

Business Strategy

- Projects
- Mixed teams lead by GAIO Staff
- Technical Strategy Cells
- Value adding teams specialized in MBD, Safety, Security...
- Off-shore/Near-shore Outsourcing
- Outsource several specific time-costly tasks in high volumes to Off-site teams for increased efficiency and cost reduction



Original Tools to boost the quality and efficiency of our services

We efficiently manage systems and development processes of ever-growing complexity

Objectives

- Develop useful tools and provide them at affordable prices
- Assist the installation of Software Quality Verification processes with ISO in mind
- Suggest new methods whose efficiency has been proved to our customers and increase their QCD
- Use our secure off-shore facilities to reduce costs

We contribute to improving customer development and engineering ability

We provide engineering services to support customer development based on our over 30 years of experience in embedded tool development. As an experienced tool vendor we have access to extensive embedded industry information valuable to our customers. At present we primarily provide a wide variety of services for model-based development related support and embedded software quality improvement. In addition, based on our close relations with our customers we can develop and improve useful test tools solutions. We are truly grateful for your consideration in using our engineering services.



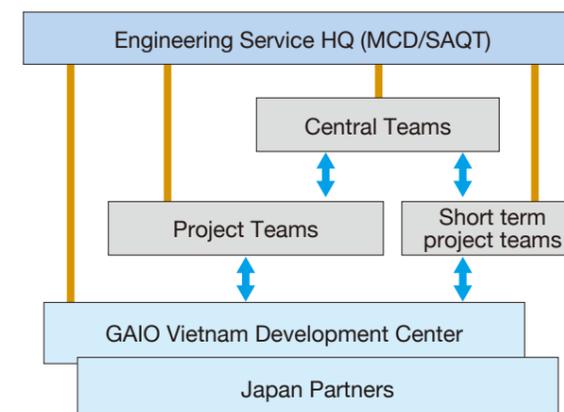
YOJI IWAI, Director
Engineering Service Division

Our Engineering Services

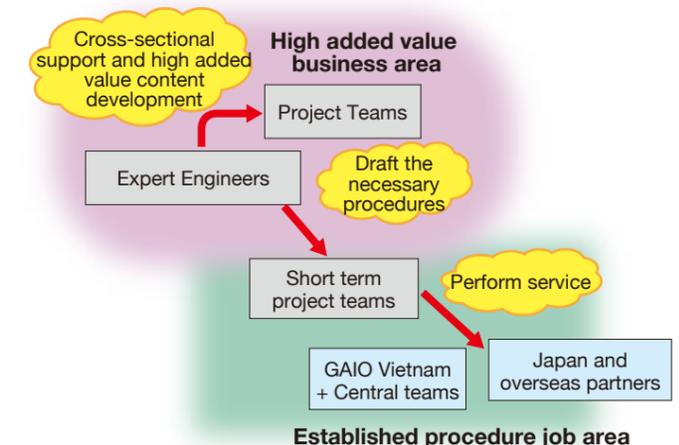


Support installation of MBD processes & tools	Reverse Modeling (Code to Model)	Model Refactoring / Model Reduction	Modeling (Simulink/UML/SySML/SCDL) New/Update
Support installation of ISO26262 conform Safety Concept Design New/Update	Support transition to MBC/MBT New/Update	Test Partner SQV-MBD New/Update	
High added value HILS Operations	Support installation of Virtual Testing environments New/Update	Support transition to AUTOSAR & AUTOSAR Test Environment New/Update	
Software Quality Improvement seminars & Assessment	Legacy code refactoring	Test Partner SQV (Unit Test)	Consulting for Secure Coding New/Update
Software test service for AUTOSAR systems New/Update	Support establishing Software Quality Assurance processes	Unit Test "On the Track" (Test Process Consulting)	Support transition to Next Generation Continuous Integration New/Update
ALM Integration of Development Tools	Engineering Staffing	On-site Technical Team	

Established service framework with domestic and offshore service partners



Expanding engineering service operations

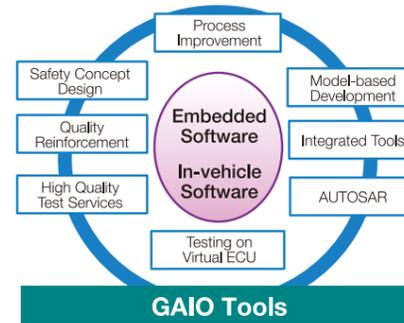


We make sure to reach our customers' mid and long-term objectives during Product Design and Development with our expertise and multiple specialized teams.

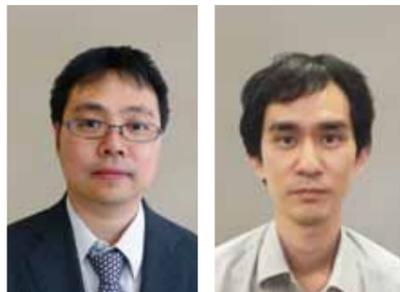


SHIGEKI TAKEUCHI
Project Manager

There are many challenges to face in order to create and develop a product that is safe and reliable but also marketable and competitive while cooperating with other suppliers. To solve these issues, our specialized teams combine their knowledge of Quality Reinforcement, Functional Safety, Model-based Development, Process Improvement, Tool Optimization, AUTOSAR, Virtual ECU Testing and Test Services, and help you reach your mid-term objectives (Safety, Reliability, Competitiveness). We also provide services to customers already in mass-production phase, who face issues with time-constrained iterative processes.



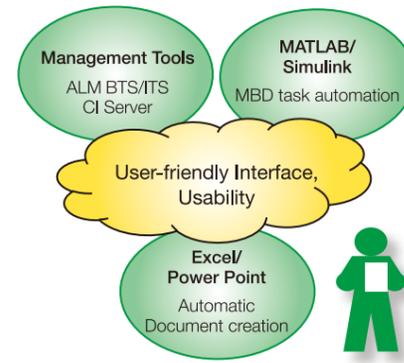
Assess the customer's needs and efficiently develop and provide tools to optimize performance



TSUTOMU SUGIMOTO Project Manager
HIDEAKI TAKAI Engineer

Model-based Development is now widely adopted in the Automotive industry. We help you set up an efficient tool chain to boost the efficiency and quality of your Development and Testing process.

We can quickly create tool chains especially adapted to the customer's needs and quality standards (as a tool vendor, this is GAIO's specialty after all!) We provide management tools (ALM, BTS/ITS, CI servers...), MATLAB/Simulink based MBD automation, automatic report generation in Excel/PowerPoint, user-friendly GUIs, etc...



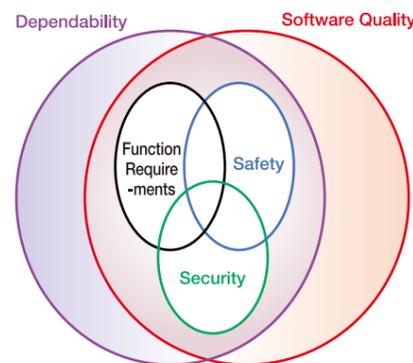
Tool Chain creation and installation Support

From Safety Concept Design support to the completion of the Software Testing Process, experienced professionals assist you



KENJI ONISHI
Test Evangelist
Chief Consultant

To achieve the level of Quality and Dependability expected in recent embedded systems, the development process must consider not only the Functional Requirements but also the Safety and Security aspects of the product. This requires advanced practical skills in addition to standard software engineering knowledge. Engineers benefitting from GAIO's long experience and broad network in the Embedded Industry can assist you in the Product Quality Assessment (Verification & Validation) processes. We closely support all the steps of Product Quality Assessment on both branches of the V Process, from the use of the Safety Concept Design notation Language (SCDL) conforming to the Functional Safety standards in the early Design phases, to the installation of tools to automate testing in late Verification phases.



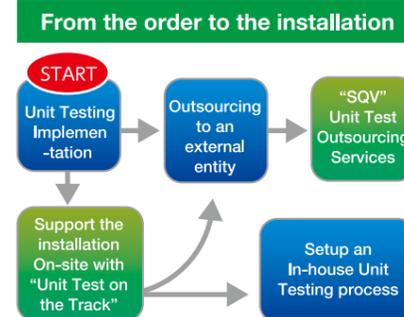
Unit Testing with our High-Quality Test Service "Test Partner SQV"



MASAYUKI UEDA
Engineer

Many customers use our SQV (Speed, Quality, Value) service because they want to perform Unit Tests but lack resources or knowledge of Test Design or Coverage Measurements. Based on its long experience as a tool vendor, GAIO can help you with your Unit Tests (White & Black box) with both domestic and off-shore staff to quickly respond to your needs.

We also offer "Unit Test On the Track", an On-site Support solution for customers who consider including Unit Testing in their standard development process.



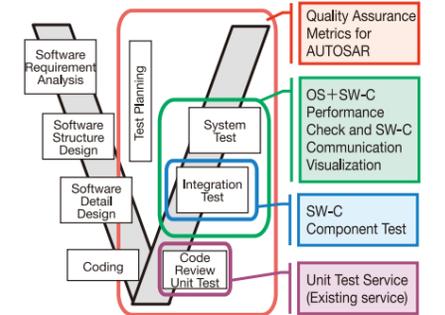
On-site Support for AUTOSAR development processes: ahead of the market, a team already experienced with the AUTOSAR architecture assists your transition



KAZUHIRO TSURUMARU
Project Manager

The AUTOSAR standard platform defines Basic Software Modules and their interface for Automotive Software. Its goal is to enable Application Software to be independent from the Hardware by using an intermediate standardized software layer. To let you focus on the Application services, our team can deal with all the AUTOSAR related development: design, configuration, integration of legacy code...

As a well established Test Tools vendor, we can also help you enhance the Quality Assessment process for your software, and we will soon provide Debug Tools supporting AUTOSAR.



A team with global experience with the complete Model-Based Development process

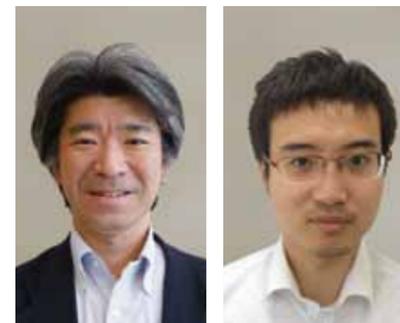


TORU MURAKAMI
Chief Consultant

From the software development and testing to the end of the ISO Certification process, we can support you on all phases of the MBD process with our extensive knowledge based on several years of experience in the Embedded Software industry. Using our experience from a broad range of MBD related projects from the biggest OEMs and Suppliers, we can suggest adapted solutions for your model-based development, testing and process tuning to maximize your ROI. We can also offer permanent On-site support from a specialized team stationed at the customer's site to speed up communication and provide high added value services in timely manner.



Let us handle the Quality Improvement of your Automotive Software



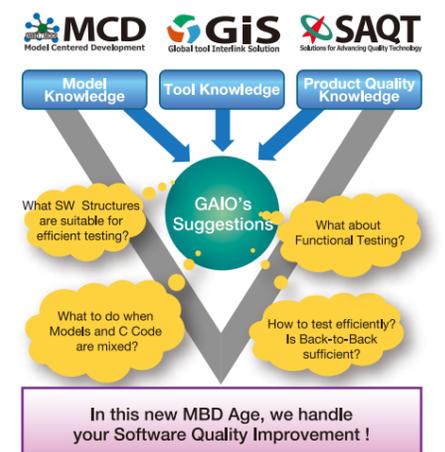
KOJI NUMATA Technical Manager
SHUNYA KIKUCHI Engineer

With the industry's shift toward MBD, the old ways of thinking and methods for designing and testing Software "by hand" become obsolete.

We have a lot of feedback from Software Testing teams worrying about the transition to MBD:

- "Is Back-to-Back testing sufficient?"
- "How to efficiently test complex models?"
- "How to efficiently use Automatic Test data Generators?"

GAIO can help you plan and optimize your Quality Assessment and Testing procedures for the MBD Age in conformity with the ISO26262 standard and no loss in product quality or time schedules.



Start Testing in the early design phases with Virtual ECU Testing Environments. Setup MATLAB/Simulink or Hardware-in-the-Loop Simulation Environments.



TAKEO WATANABE
Project Leader

In the recent years, the demand for high added value and power-efficient cars has led the ECUs and the SW they execute to perform multiple high-level functions and grow in complexity. This is one of the reason of the rise of MBD. But as a consequence, testing an ECU against the requirements decided in Design phases must wait till the real system is available, and early detections of errors is not possible. Using our fast MPU Simulators, GAIO can provide Virtual ECU Test Environments to start testing before the physical system is complete. Combined with our MBD services, we can support the whole product development on both branches of the V process with Full Solutions or Test Environment Setup.

