Real time.
Real solutions.

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Real-Time Experts.

Real-Time Experts: A strong alliance since 2008.

The Real-Time Experts alliance was founded in November 2008 by AbsInt, Gliwa and Symtavision to provide comprehensive, integrated and efficient solutions for mastering the timing of complex embedded real-time systems. The Real-Time Experts draw on the tools, expertise and methods of the participating specialists – from timing design through debugging to verifying real-time capability.

Together, the Real-Time Experts cover all state-of-the-art techniques and offer the right approach for any kind of timing problem or question.

The Real-Time Experts provide a single point of access to partners' leading-edge solutions, directly through one of the partners and globally through a network of distributors in Europe, the USA and Asia/Pacific.

Real-Time Experts: Integrated solutions.

AbsInt provides tools to determine safe runtime bounds at the code level based on precise processor models. Symtavision's solutions facilitate system-level timing design, optimization and verification for integrated control units, communication protocols and networked systems. Gliwa offers runtime measurement and tracing, enabling developers and integrators to debug and verify their software and validate their timing models.

The full potential of these approaches is realized in combination with each other. And it is exactly this combination that is provided by the Real-Time Experts' seamless interfaces between tools.

The Real-Time Experts solutions have been proven in many timing- and safety-critical automotive and aerospace projects. From system-concepts and early testing to timing debugging and verification of functional safety, from software to complete systems – with the Real-Time Experts you master real-time challenges throughout the development cycle.

SYMTA VISION

SymTA/S
Scheduling analysis,
timing design and
virtual integration
for ECUs and networks

TraceAnalyzer
Visualisation and analysis
of timing measurements,
seamless integration
with SymTA/S

GLIWA
embedded systems

T1
Verify and visualise timing
Debug and optimise
Know CPU load
Know execution times

GPSgecko mkII
10Hz GPS to CAN converter

gliwOS
light-weight automotive RTOS
portable within a day

AbsInt

aiT
Proving safe
worst-case
execution
time bounds

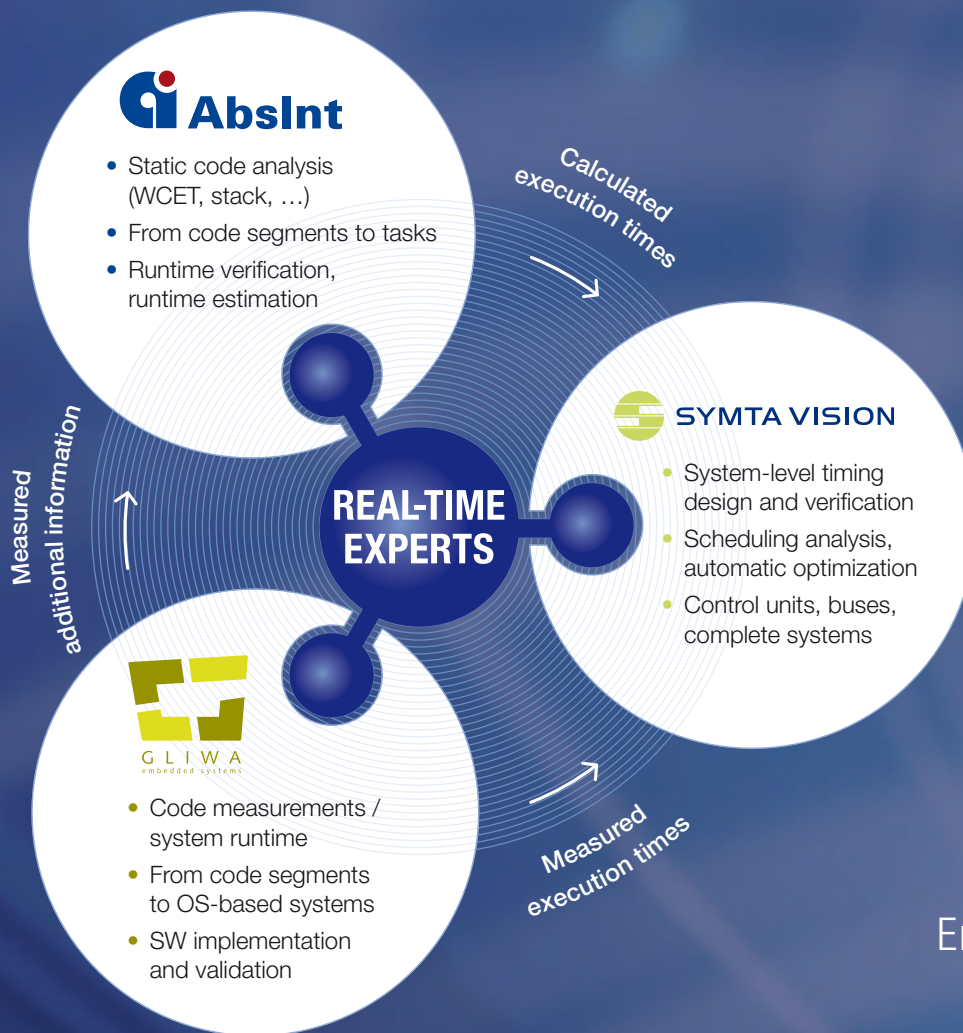**StackAnalyzer**
Proving the
absence of
stack overflows

Astrée
Proving the
absence of
runtime errors
in C code

Qualification
DO-178B,
ISO-26262,
EN-50128

Integrated tool chains for real-time systems:

AbsInt
- Static code analysis (WCET, stack, ...)
- From code segments to tasks
- Runtime verification, runtime estimation

Calculated execution times

Measured additional information

REAL-TIME EXPERTS

SYMTA VISION
- System-level timing design and verification
- Scheduling analysis, automatic optimization
- Control units, buses, complete systems

GLIWA embedded systems
- Code measurements / system runtime
- From code segments to OS-based systems
- SW implementation and validation

Measured execution times

WCET Analysis
Stack Analysis
Run-time Measurement
Real-time Tracing
Timing Debugging
Scheduling Analysis
End-to-end Timing Analysis
Real-time Capability
Safety Verification
System Optimization

Symtavision's innovative system-level timing design and verification tool suite, **SymTA/S**, helps engineers master system integration from early concepts to final verification. The product analyses and optimises the scheduling of software on electronic control units, messages and signals on buses as well as end-to-end timing in distributed systems. **TraceAnalyzer** is a seamlessly integrated solution for visualising and analysing timing data from both measurements and simulations.

Expertise:
Scheduling analysis, end-to-end timing analysis, schedule design, optimization and verification

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Whether in-lab or in-vehicle: The measuring and tracing software *T1* protocols and visualises the timing of functions, runnables, and any code segment. The evaluation and optional supervision is carried out on the ECU in real-time. If required, the results are transmitted to the PC via a hardware interface (e.g. CAN or standard diagnosis).

Expertise:
Timing-measurement, -tracing, -debugging, -optimisation, -verification, -supervision, 1st class engineering services Timingsuite T1

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aiT computes safe upper bounds on the worst-case execution time of tasks precisely taking into account the processor architecture. **TimingExplorer** supports processor and configuration exploration in early phases. **StackAnalyzer** computes safe upper bounds on the maximal stack usage of tasks. **Astrée** proves the absence of runtime errors in C programs.

Expertise:
Static code level analysis, safe time bounds based on precise processor models

Real-Time Experts
info@realtimeexperts.com
www.realtimeexperts.com

Symtavision GmbH
Frankfurter Straße 3 c
38122 Braunschweig
Germany
Tel. +49 (0) 531 886179 00
Fax.+49 (0) 531 886179 29
info@symtavision.com
www.symtavision.com

GLIWA GmbH embedded systems
Winterstraße 9 a
82362 Weilheim i. OB.
Germany
Tel. +49 (0) 881 138522 0
Fax.+49 (0) 881 138522 99
info@gliwa.com
www.gliwa.com

AbsInt Angewandte Informatik GmbH
Science Park 1
66123 Saarbrücken
Germany
Tel. +49 (0) 681 38360 0
Fax.+49 (0) 681 38360 20
info@absint.com
www.absint.com

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tool chains
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**REAL-TIME
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