



Future Prospects

Vector AUTOSAR Roadshow 2008

> Introduction - AUTOSAR as an enabling technology

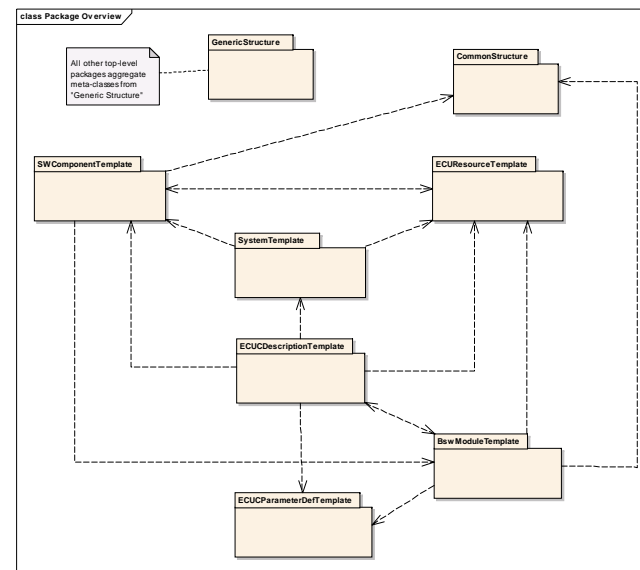
New technologies for future development processes

AUTOSAR Standard - future trends

Introduction - AUTOSAR as an enabling technology

AUTOSAR – what is new?

- ❑ Automotive software applications are modularized using AUTOSAR SWCs
 - ❑ Module boundaries and interfaces are defined by formal methods
 - ❑ Target-independent implementation of applications
- ❑ ECU configuration in very detailed level
 - ❑ Formal definition of BSW internal interfaces available (at least in ICC3)
 - ❑ Architecture and behavior of BSW modules is standardized



Agenda

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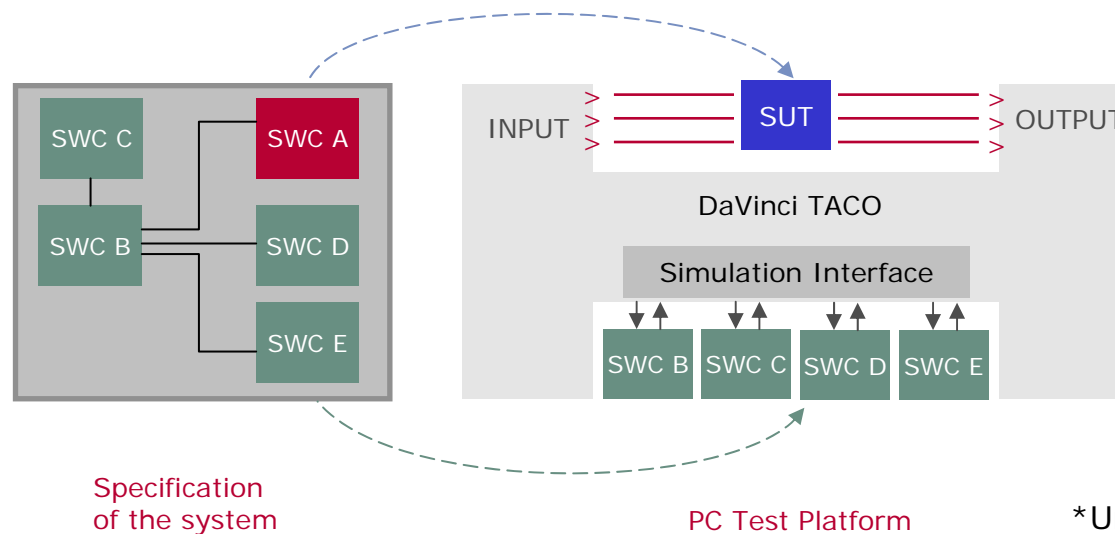
Development of AUTOSAR SW components

- ❑ AUTOSAR introduced a standardized way to specify application interfaces
- ❑ Today, this brings benefits during ECU integration (RTE generation)
- ❑ Additional potential
 - ❑ AUTOSAR application components off-the-shelf
 - ❑ New business models: Application component suppliers
- ❑ New technology required for development support
 - ❑ Development tools to support individual AUTOSAR SW components
 - ❑ Testing tools for AUTOSAR SW components

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Development of AUTOSAR SW components

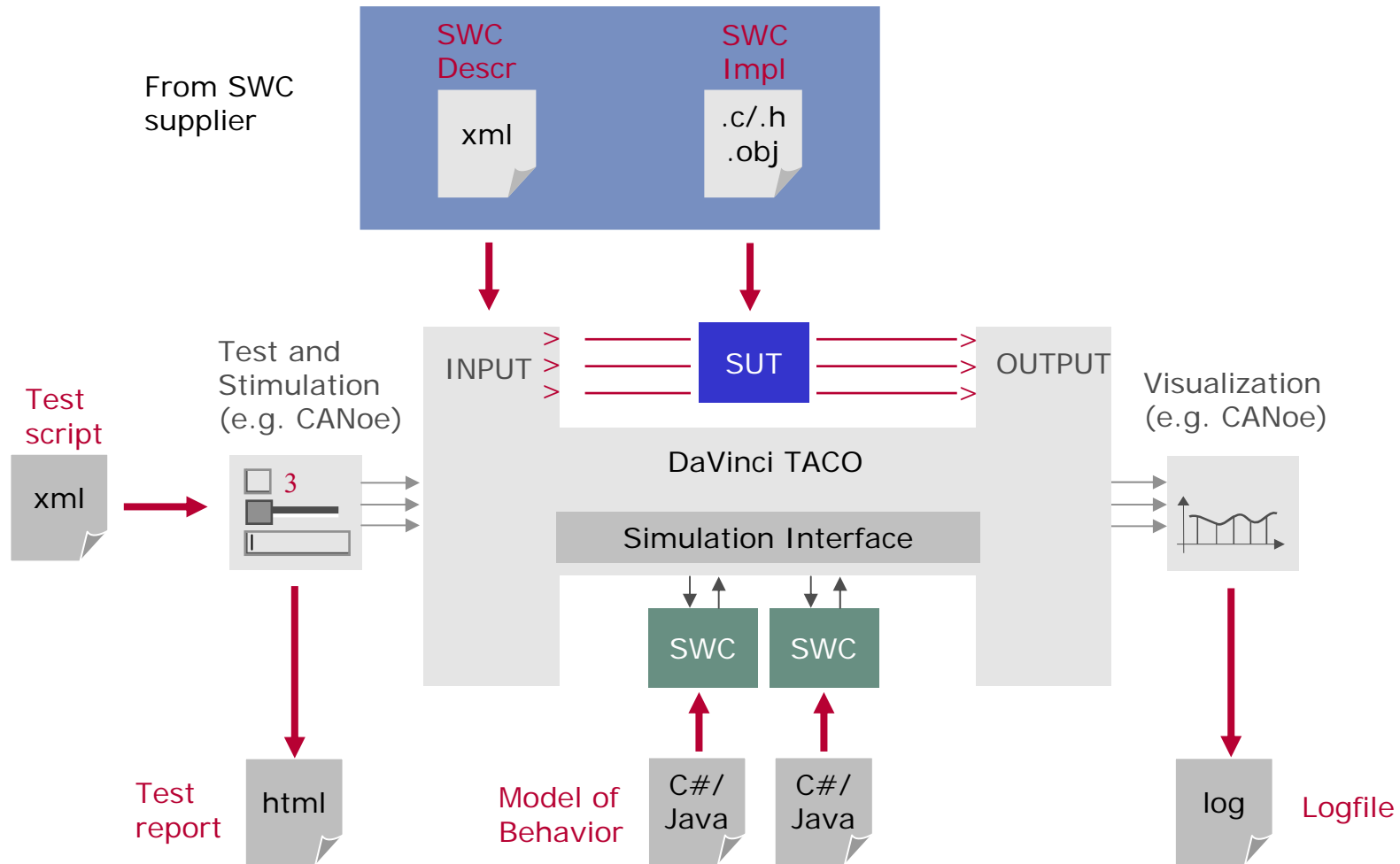
- ❑ PC-based test platform for AUTOSAR SW components*
 - ❑ Goal: Test of SW component implementation (source or object code)
 - ❑ Solution: Emulation of the Virtual Function Bus
 - ❑ Dynamically configured via AUTOSAR XML
 - ❑ Simulation interface for remainder-of-system SW components
 - ❑ Interfaces to tools for test management and visualization (e.g. CANoe)



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Development of AUTOSAR SW components

Configuration of the test platform



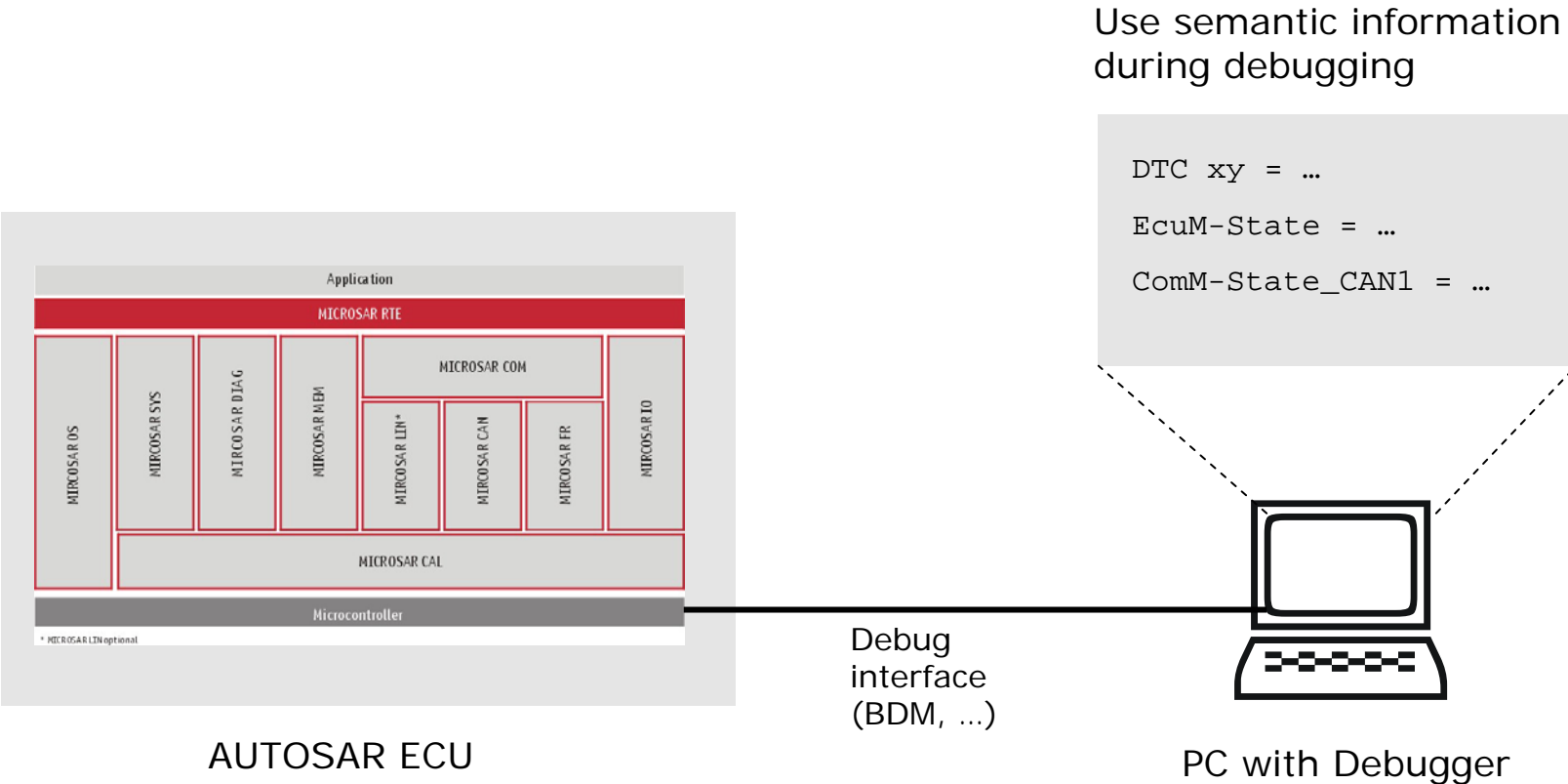
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ECU development

- ❑ AUTOSAR introduced a detailed ECU Configuration Description with formal definition of all BSW parameters
- ❑ Today, this brings benefits during ECU integration
 - ❑ Tool support for BSW configuration
 - ❑ Integration of legacy BSW
- ❑ Additional potential
 - ❑ Debug support during ECU white-box test
- ❑ New technology required
 - ❑ High-level/symbolic debugging of BSW stack based on AUTOSAR ECU configuration description

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ECU development



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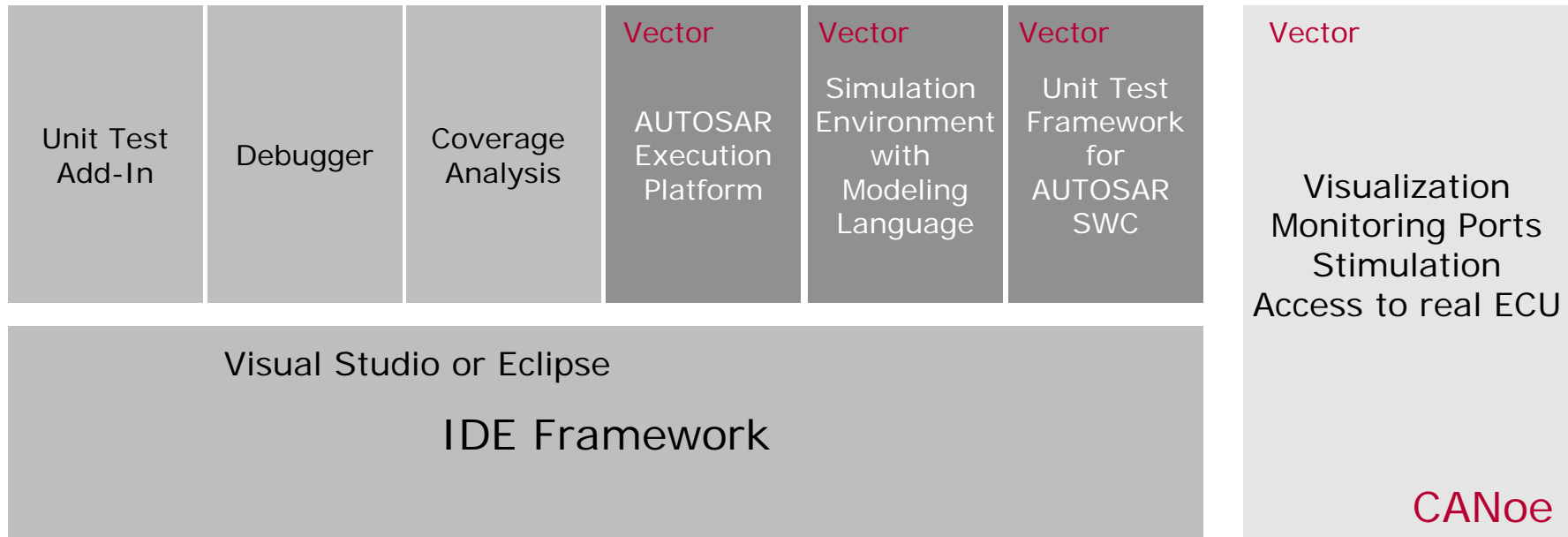
Automotive IDE

- ❑ Base for the development environment: well-established IDE like e.g. Eclipse
- ❑ Advantages: benefit from technically mature and feature-rich development environments for coding, development and test
- ❑ Requirements for automotive domain: good AUTOSAR support
 - ❑ Support for SW component development
 - ❑ Support for ECU development and integration

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Automotive IDE

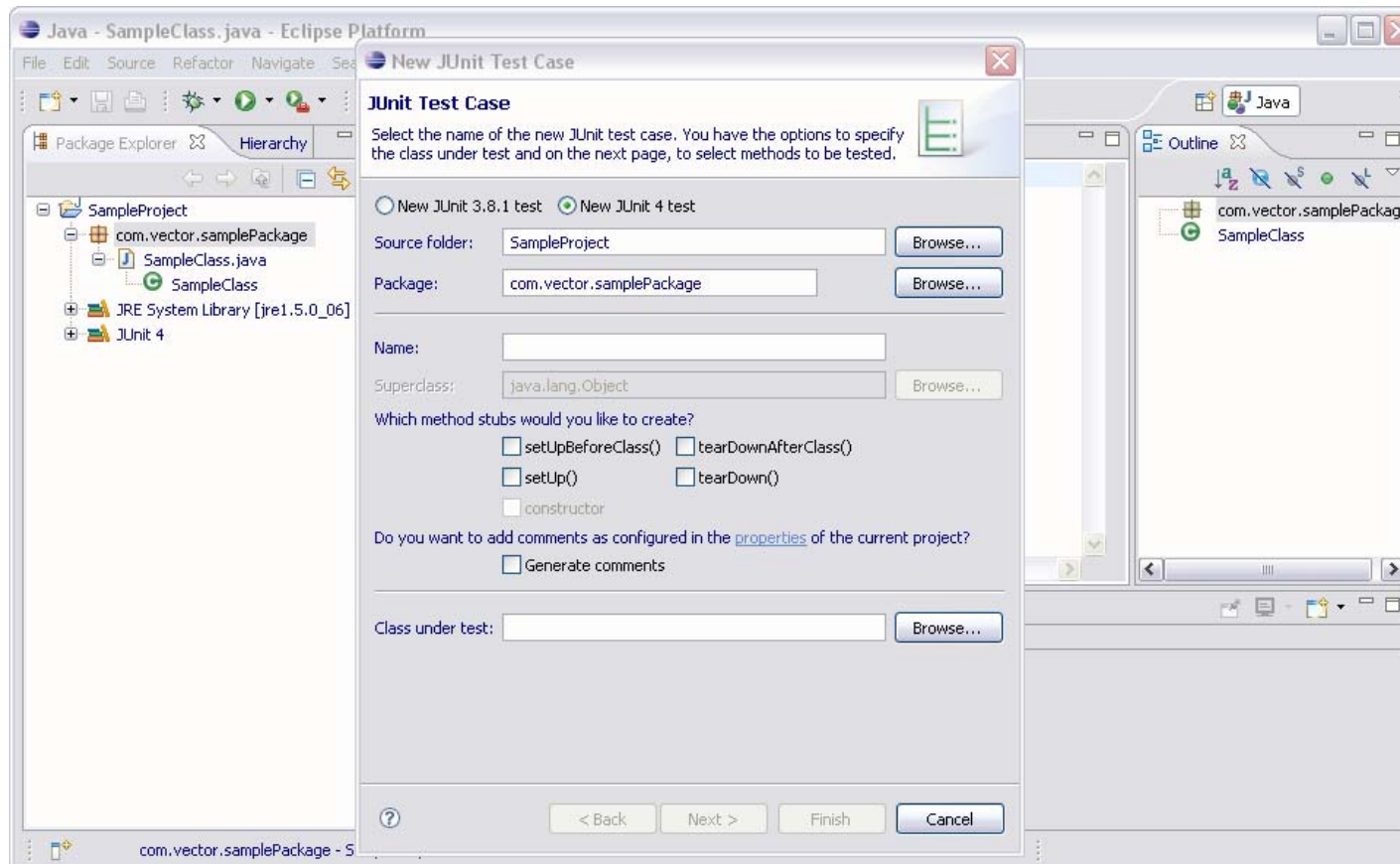
Extending a standard IDE with AUTOSAR support



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Automotive IDE - Support for unit tests in Eclipse

Using e.g. Eclipse techniques like JUnit Tests for test-driven development



Agenda

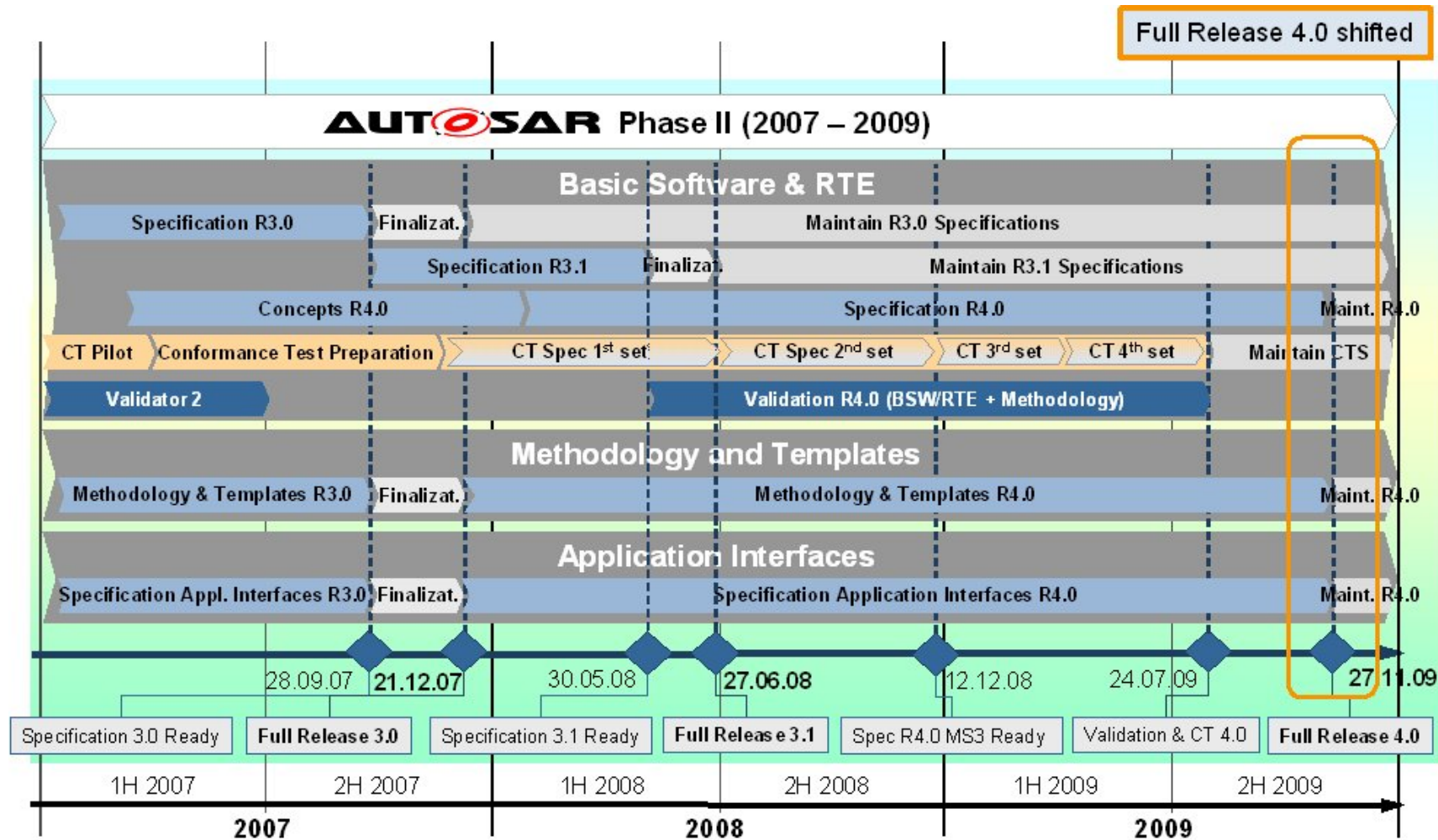
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> AUTOSAR Standard - future trends

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AUTOSAR Roadmap



Roadmap dated March 2008. Source: <https://svn2.autosar.org/>. AUTOSAR confidential.

AUTOSAR Standard - future trends

„Mega Trends“ in AUTOSAR

- ❑ Safety
 - ❑ Meanwhile better maturity of safety standards outside AUTOSAR (compared to beginning of AUTOSAR)
 - ❑ Extra work package for safety aspects
 - ❑ Variant Handling
 - ❑ Consider systems and ECUs with variant functionality
 - ❑ Timing
 - ❑ Definition of end-to-end timing on system level
 - ❑ Consideration of BSW timing as well
- ➡ Many new ideas (main goal: practical usability of AUTOSAR)
- ➡ Complexity of AUTOSAR R4.0ff will increase

AUTOSAR Standard - future trends

AR 4.0 Proposed Concepts (highlights)

- ❑ Ca. 70 concepts proposed (subject to acceptance by AUTOSAR project leader team)
- ❑ Rework of methodology: Automatic scaling/type conversion of ports
- ❑ Variant concept: Variation points in design, binding times (design time, pre-compile, link time, post-build-loadable, ...)
- ❑ Post-build loadable RTE
- ❑ System timing definition
- ❑ Measurement/Calibration configuration process
- ❑ Build system enhancement
- ❑ Multi-core support
- ❑ Handling of Memory Access Rights

AUTOSAR Standard - future trends

Vector's commitment

- ❑ Vector continues to contribute know-how and man power to the AUTOSAR standardization
- ❑ Vector's products will be continuously developed to keep track with future technologies within AUTOSAR
- ❑ You have new ideas? – Vector is the competent partner to discuss technical solutions





Thank you for your attention.

For detailed information about Vector
and our products please have a look at:

www.vector-informatik.com

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