

# TPTP-based testing at SAP

An overview of the TPTP-based test infrastructure being developed at SAP as part of the NetWeaver platform  
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## Our Goal:

establish an infrastructure to integrate all test tools used at SAP

## The business case:

testing of SAP-internal and customer code

Technologies involved: mainly ABAP and Java/J2EE

Development landscape: various Java build environments, ABAP application server; multiple combinations of DB, OS, Hardware

Test categories and tools:

•Static, unit, functional, integration, load, performance tests

•Internal, open source, third-party tools

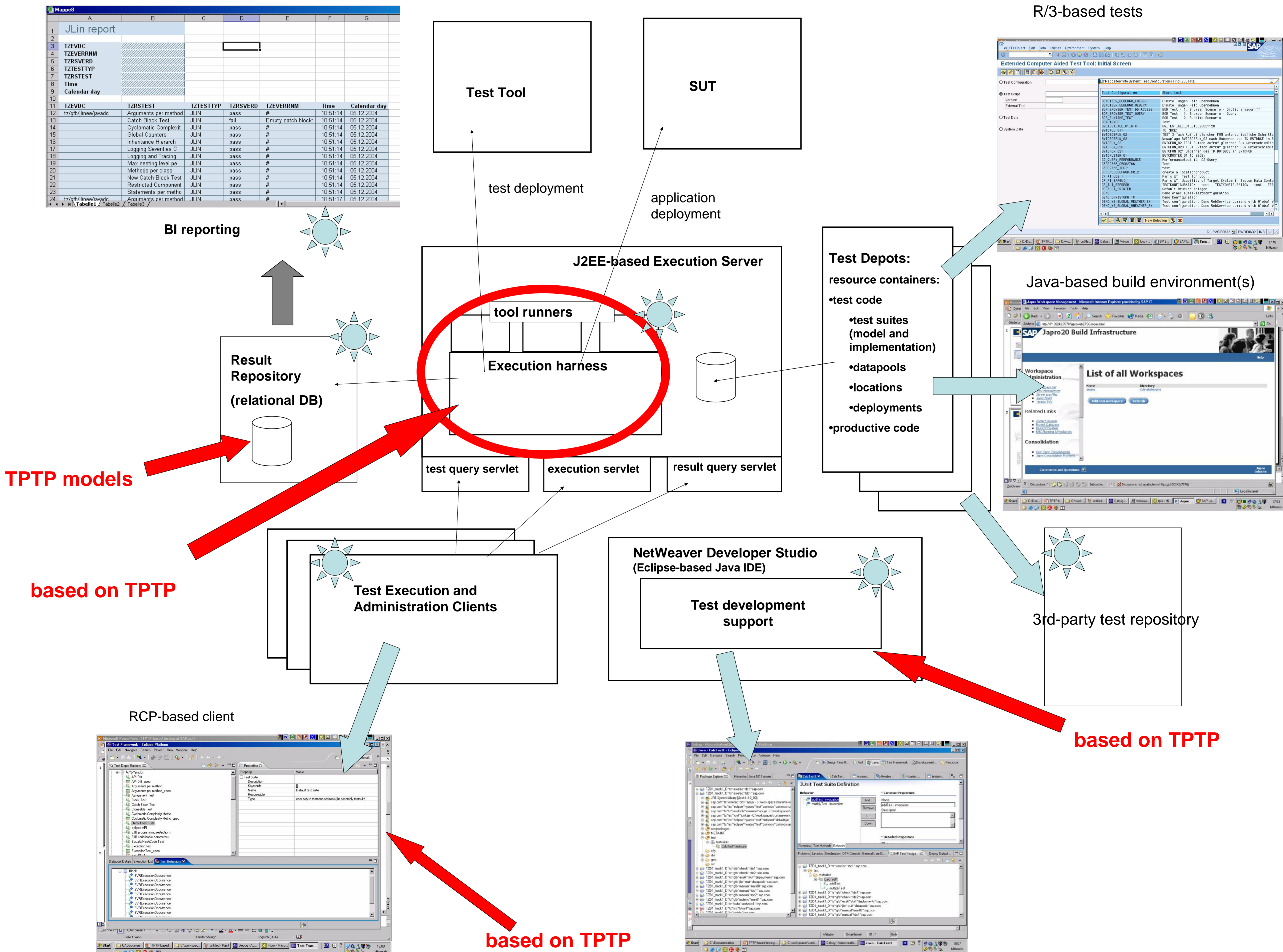
User roles: application developer, test developer, tester, test coordinator, QM, Final Assembly

Further requirements: scalability, performance, auditability

- common models
  - test behaviors and metadata
  - System Under Test
  - test results
- interoperability
  - recursive invocation
  - data exchange
- common functionality
  - test persistence and retrieval
  - test planning, launching and monitoring
  - configuration and deployment
  - result persistence
  - result reporting, analysis and archiving

- Java IDE integration
- openness and extensibility
  - compliance with (de-facto) industry standards
    - Eclipse
    - Hyades/TPTP
    - UML2TP
  - extension points to add new
    - test tools
    - software technologies
    - reporting capabilities

Time	Calendar day	TZEVDC	TZSTEST	TZSTESTP	TZRSVERD	TZVERRNM	Time	Calendar day
10:51:14	06.12.2004	tz/gb/jline/javadc	Arguments per method	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Catch Block Test	JLJN	fail	Empty catch block	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Cyclematic-Complex	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Global Counters	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Inheritance Hierarchy	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Logging Servlets C	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Logging and Tracing	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Max nesting level pe	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Methods per class	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	New Catch Block Test	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Restricted Component	JLJN	pass	#	10:51:14	06.12.2004
10:51:14	06.12.2004	tz/gb/jline/javadc	Statements per metho	JLJN	pass	#	10:51:14	06.12.2004
10:51:17	06.12.2004	tz/gb/jline/javadc	Arguments per method	JLJN	pass	#	10:51:17	06.12.2004



## Admin client features

- Test depot views: test suites, datapools, locations, deployments
- Test job editor; job search
- Datapool, location, deployment editors
- Test suite creation on the fly
- Result search and display

## IDE features

- All administration client features, plus:
- Integration of test-related resources into SAP's Java landscape
  - Specialized creation wizards and editors for test suites, locations, datapools
  - Test project management
  - Direct deployment to the execution server



# TPTP-based testing at SAP

## Feature summary: Development

- test development, upload and deployment controlled from the IDE
- support for testing of local development

## Feature summary: Quality Assurance

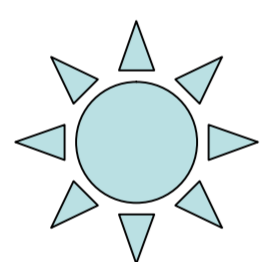
- high-level monitoring of all existing tests and results
- bug-tracking and notification support
- integration in product innovation lifecycle
- support for high-level test scenarios
- easier landscape configuration

## Why is TPTP good for us?

- de-facto standard
- powerful, flexible object models
- Eclipse plugins
  - integrated in the NetWeaver Developer Studio
  - Eclipse RCP compliant
  - extensible
- execution environment can be partly reused

## SAP extensions and specializations

- test execution triggered outside Eclipse (J2EE-based execution server)
- generic test depot interface
- Result persistence on relational DB
- additional test suite metadata
- datapool functionality
- generic test suite behavior
  - recursive test invocation
  - input/output can be shared between tests
  - loops over datapools
  - conditional execution



## Integration points

- Test depots: test providers (e.g. 3rd-party tools) can register themselves with the test execution server
- Result repositories: listeners can be registered to monitor and save execution results.
- Test clients: since the whole communication with the execution server is based on HTTP, XML and EMF, new clients can be easily implemented
- Test tools: new tools (design and run time) can be added using TPTP standard mechanisms
- Datapools, locations: specialized handlers can be added (design and run time)
- Result reporting: TPTP standard extension for reporting

## Summary

SAP is successfully using TPTP as technical foundation for an integrated test infrastructure that will improve efficiency and reduce cost of all QA-related phases within SAP's development process and at customer sites.