Titan is a test automation toolset supporting the complete chain of test development, test execution, and result analysis. It is based on the standard test language TTCN-3 and thus is extremely well suited for grey-box and black-box testing such as component, function, integration, system, acceptance, conformance, and model based testing. In addition, Titan is being used as an engine to create additional tools for performance and security testing.

TTCN-3 has a proven track record for testing complex systems with a large code base and is applicable in multiple domains.

**Industrial Toolset**

The Titan toolset enables teamwork in distributed teams worldwide and can be used in workflows where tests are either manually developed, generated from models, or developed for continuous integration. Titan provides a scalable toolset.

- Support for international specifications ASN.1, XSD, IDL and JSON
- Fast compilation, fast incremental re-compilation
- High performance runtime
- Detailed, configurable logging
- Logger plug-in API, several loggers are included (textual, LTTng, JUnit)
- APIs for external C/C++ functions and specific codecs
- API to interworking with other languages such as Java, Python, etc.
- Built-in codec generators for XML, ASN.1, bit-oriented, and textual protocols
- System adapters in C++ or Java
- Distributed, multi-platform test execution on Linux, Solaris, and Windows platforms
- Easy to add/modify protocols
- 50+ protocols are provided

**Eclipse-Based and Command Line Environments**

Titan provides a complete Eclipse IDE and a command line environment. Both environments have been architected to allow workflows that use them interchangeably.

Titan's Eclipse interface allows the development of test cases, the launch and monitoring of test execution, and the analysis of test results. The editor provides sophisticated editing, search, code completion, analysis and quality assurance features. Test execution events and status are shown in real-time and are logged for post-execution analysis. Test logs can be viewed both graphically and in a textual/tabular format. When selecting a log event, the source code line producing the event is automatically shown.

Command line components allow the building of executable test suites and launch test runs on demand, or automatically on an event-based or scheduled manner (nightly) for continuous integration. They also allow test projects, developed in the Eclipse environment, to be built and executed from the command line.
TTCN-3: the Universal Standard Test Language

One of Titan's key features is its implementation of the Testing and Test Control Notation version 3 (TTCN-3) language. TTCN-3 is an international standard, specified and published by ETSI and endorsed by ITU-T. It has been applied to a variety of domains such as automotive, avionics, finance, healthcare, IT, energy, space and telecom. It is also used in research projects and by many universities. TTCN-3 is used to produce conformance and interoperability test standards, by standardization bodies and consortia such as 3GPP, AUTOSAR, ETSI, MOST cooperation, OMA, the Wimax Forum and the oneM2M global IoT standardization alliance.

TTCN-3 Benefits

• Efficient test development with maximized design-time checking capabilities
• Well suited for all forms of grey-box and black-box testing
• High-level programming language enriched with features for testing needs
• Rich type system, allowing the support of a wide range of protocols and API definitions
• Test data can be based directly on XSD, ASN.1, IDL and JSON specifications
• Maximum reusability due to separation of the test logic from the details of the environment: test cases are reusable in different software development phases, platforms and test environments

Application areas

All types of communication interfaces and APIs, in particular:
• Mobile and ICT networks, network components and end-user equipment
• Web services, internet applications and systems using IP-based communication
• Intelligent Transport Systems (ITS), cooperative ITS
• Internet of Things (IoT), smart metering
and many more...

PolarSys, a User Driven Ecosystem

PolarSys is an Eclipse working group dedicated to open source solutions for embedded systems development. PolarSys Solutions address the key phases of development in domains such as aeronautics, aerospace, automotive, defense and security, energy, health care, railway, and telecommunications. PolarSys is led by large end-user organizations such as Airbus, Airbus Defense and Space, Airbus Helicopter, CEA LIST, Ericsson, Combitech/Saab, and Thales. It is an ecosystem of end users, suppliers, and research/academia that collaborate to create an advanced tool suite that can be adapted to different contexts. PolarSys benefits include:

• Industrial grade tools
• Open innovation and advanced features
• User-driven community
• Enables flexible make or buy strategy
• Ability to aggregate funds towards common improvements and act as a one stop shop for services
• Designed for extendibility and adaptation to your context

• Control and continuity for company-specific customizations
• Efficient system development
• No license fees
• No vendor lock-in
• Direct access to tool creators and professional support
• Long term support

Resources

Titan PolarSys solution: http://polarsys.org/solutions/titan
Titan Eclipse project: http://eclipse.org/titan
PolarSys: http://www.polarsys.org
TTCN-3: http://www.ttcn-3.org