LDRA Software Technology

Intelligent Difference Analysis (IDA) with TBevolve®

What is IDA?

This facility records differences at the source code and data levels between the user's current software release and a predetermined baseline. At the source code level the difference analysis highlights and records only those changes that involve the addition, removal or modification of functional code.

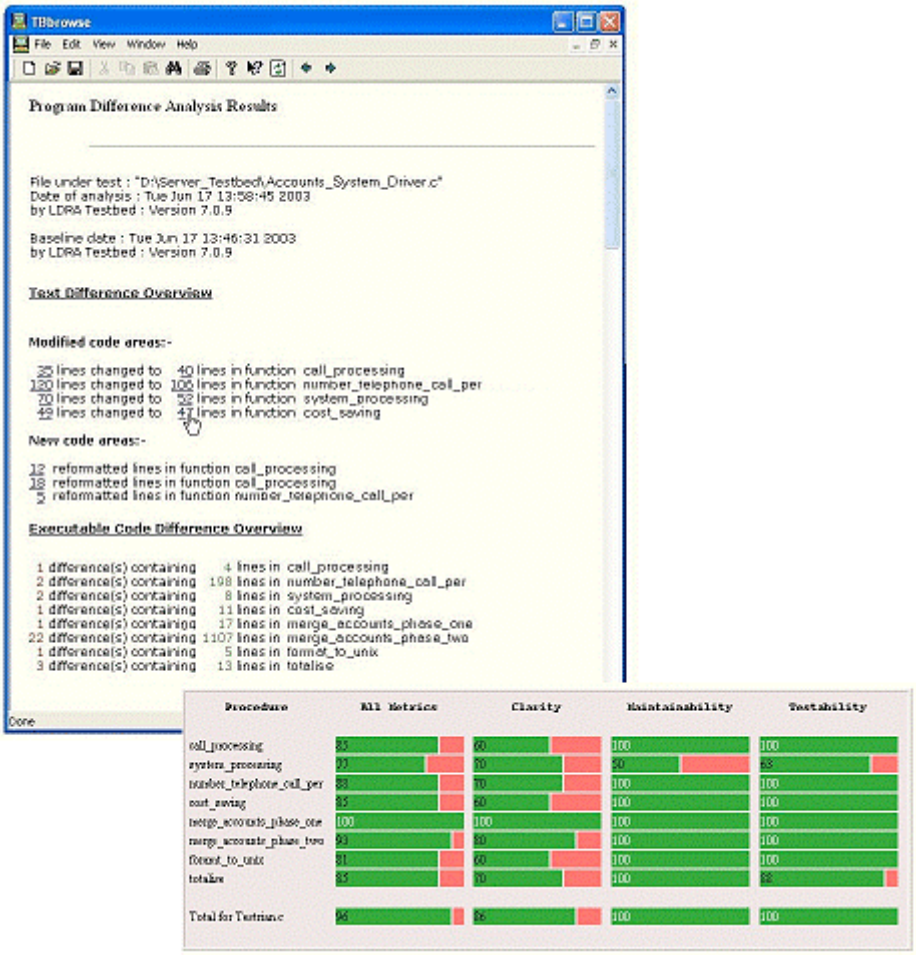
Benefits of TBevolve IDA

- Detect changes to your source code
- Identifies where changes will affect functionality
- Locates software defects
- Assists with ongoing maintenance
- Enables software version comparisons

IDA Facilities

- IDA identifies and ignores any differences that are brought about purely due to positional changes and occur as a result of reordering or reformatting existing code. This removes a considerable 'noise' overhead that is a feature of less sophisticated difference facilities.

- At the data level TBevolve highlights and records changes to existing data items and the addition of new data items. In a further extension to this basic functionality TBevolve reports on the movement of data items with respect to definition and usage, e.g. if the definition of a data item is moved from the main body of source code into an included file. TBevolve also highlights and reports changes in usage of data items. An example would be if a variable was previously read in and referenced, but the program has now been modified to output the variable, then this change of usage is detected and reported.



Intelligent Difference Analysis Display

Certificate Number FM 26376

www.ldra.com

LDRA UK & Worldwide
Portside, Monks Ferry,
Wirral, CH41 5LH
Tel: +44 (0)151 649 9300
e-mail: info@ldra.com

LDRA Technology Inc.
Lake Amir Office Park, 1250 Bayhill Drive Suite # 360
San Bruno CA 94066 Tel: (650) 583 8880
e-mail: info@ldra.com

LDRA Technology Pvt. Ltd
#2989/1B, 3rd Floor, 12th Main, 80 Feet Road,
HAL II Stage, Bangalore- 560008. Near BSNL Building
Tel: +91 80 4080 8707
e-mail: india@ldra.com

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Impact Analysis with TBevolve®

What is Impact Analysis?

Impact Analysis is a process of identifying the potential consequences of a change, or estimating what needs to be modified to accomplish a change [Bohner/Arnold 96]. TBevolve assists with this process by providing critical information, which enables users to monitor and assess the impact of software changes in key areas and hence implement specific, targeted processes with the aim of reducing the risks associated with such changes.

Benefits of Impact Analysis

- Identifies the impact of source code changes
- Assists with change documentation
- Assists with ongoing maintenance and risk reduction

Impact Analysis Facilities

Static Analysis

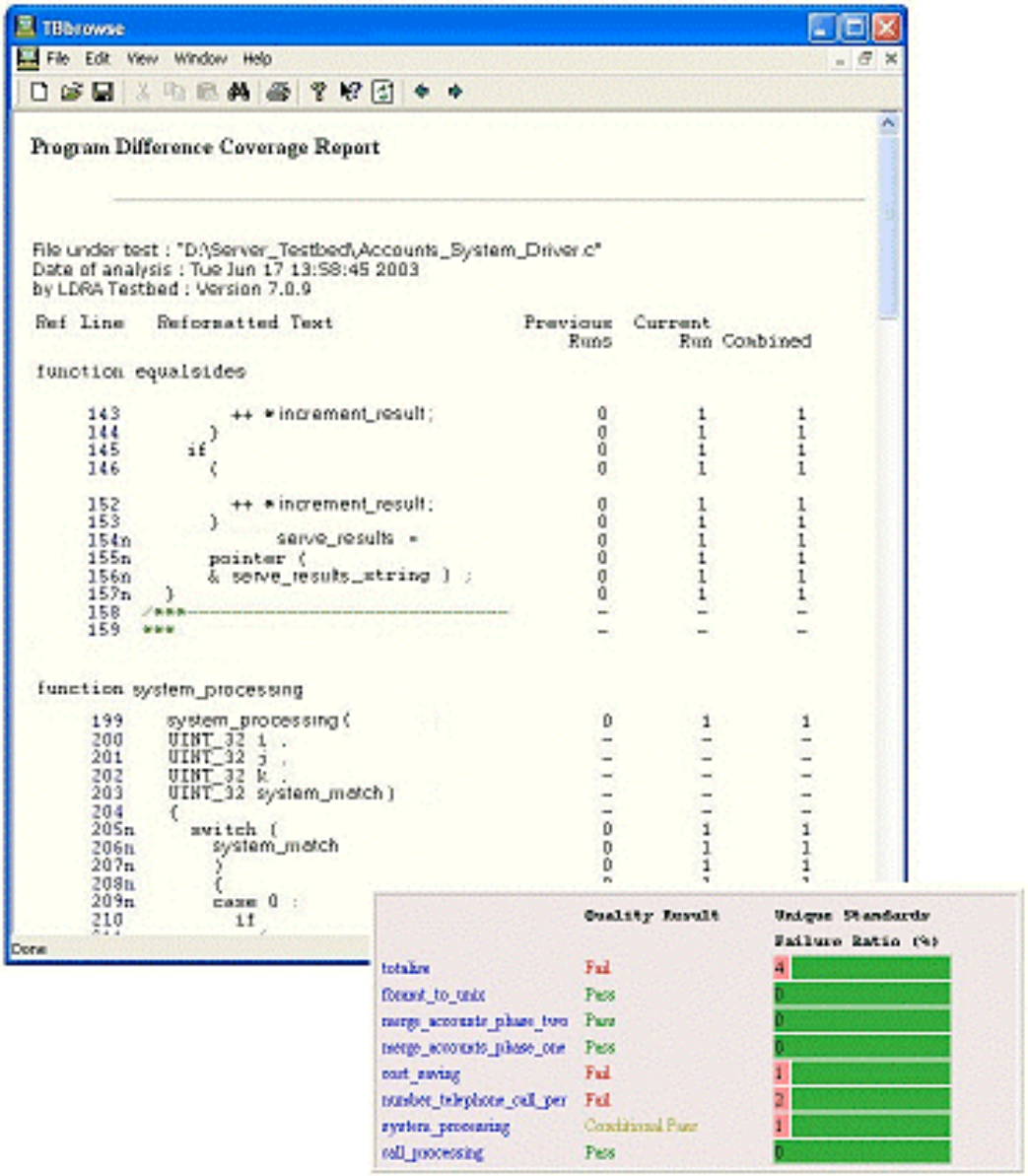
At the source code level TBevolve's IDA facility detects and records significant areas of source code change. This information is then utilised by TBevolve to provide users with a series of reporting facilities relating to the potential impact of these changes. In the static domain these may include highlighting the following:

- Additional standards violations
- Increased structural complexity
- Increased data complexity
- Reduced maintainability
- Reduced testability
- Reduced reliability

Dynamic Analysis

In addition to the reporting of this static based impact information, TBevolve extends this reporting facility into the dynamic domain, providing information on:

- Additional code statements
- Additional code branches
- Existing branches affected by code change
- Additional LCSAJs (Test Paths)
- Existing LCSAJs (Test Paths) affected by code change



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Risk Management with TBevolve®

What is Risk Management?

Risk Management is a practice that utilises processes, methods and tools for managing project risks and to provide a disciplined management environment for proactive decision making to:

- continuously assess what could go wrong (risks)
- determine the severity and hence priority of identified risks
- implement strategies to deal with the identified risks

TBevolve assists with this practice by providing users with a means of applying a measurable, repeatable analysis process to areas of code change. This analysis process enforces industry proven Dynamic Coverage Analysis techniques and, as a result, greatly reduces the risk of software failures occurring.

Benefits of TBevolve for Risk Management

- Ability to measure the impact of the analysis techniques
- Assists with change documentation
- Assists with ongoing maintenance and risk reduction
- Assists with achieving Basel II compliance

Risk Management Facilities

Another key feature of TBevolve is its ability to drive and monitor a 'managed test process', which is specifically focused upon areas of identified software change. This facility first highlights specific statements, branches and LCSAJs (Test Paths) associated with sections of changed code. It then utilises the existing Dynamic Coverage Analysis facilities of LDRA Testbed to lead users through the process of generating the necessary test data to exercise these identified statements, branches and LCSAJs. In addition it reports and monitors the effectiveness of this test process as it evolves.

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