



## PITSS.CON Success Story

### *Nomen est omen*

## *Company for Quality Assurance TPA Earns a Top Grade in Software Quality*

*“Now we can prove more than just the quality of our software when it comes to maintainability. Thanks to the metrics from PITSS.CON Source Code Analytics, it is also obvious that our investments in the constructive quality assurance are paying off and with our development we are optimally positioned for the future.”*

*DI Reinhard Stöger Team Leader IT Software Development LEAN IT Services,  
TPA Gesellschaft für Qualitätssicherung und Innovation GmbH*



**An old saying goes “The cobbler’s children go unshod”. However, nothing could be further from the truth when it comes to the software at the TPA Gesellschaft für Qualitätssicherung und Innovation GmbH in Vienna. On the contrary:**

**The one-day quality assurance workshop in which TPAQS, the main application for the test laboratory, was subjected to a comprehensive quality assessment with the help of PITSS.CON Source Code Analytics, yielded outstanding results for all the quality metrics.**

**A result that DI Reinhard Stöger, Team Leader for IT Software Development LEAN IT Services, has a right to be proud of: “Now we can prove more than just the quality of our software when it comes to maintainability. Thanks to the metrics from PITSS.CON Source Code Analytics, it is also obvious that our investments in the constructive quality assurance are paying off and with our development we are optimally positioned for the future.”**

### **Top Quality - What is That?**

In the IT sector it is undisputed that the cost risk that arises from software defects due to inadequate quality assurance must be classified as significant. The causes are obvious: According to an IDC survey, problems with software quality can be caused by several factors including increasing code complexity, distributed teams, outdated codes and the rise in multi-threaded applications.

However, not only the costs for bug fixes and failures negatively affect IT budgets: In many companies, the complexity of the existing applications makes their maintenance and further development so expensive that it is almost impossible to make new investments.

Yet we have known how to achieve higher quality software for years now. In addition to a clean architecture, development policies, measures for controlling complexity and documentation, regular reviews, i.e. code checks to ensure the software meets the desired quality requirements, are also needed. Today's established metrics for the objective assessment of source codes were already developed in the 70s and 80s. However, it is virtually impossible to apply these methods manually.

Whether cyclomatic complexity according to McCabe, Halstead metrics, maintainability index or "simple" line metrics- as soon as software becomes more complex, it is absolutely necessary to have the right tools to conduct these evaluations.

### TPAQS - Top Quality is No Coincidence

While TPA has consistently taken a quality-oriented approach to development for years, the company has only recently acquired a tool with which they can efficiently evaluate their applications based on these metrics. "It's actually quite simple," says Reinhard Stöger. "You just have to consistently pay attention to quality from the first concept onward and never make any compromises at the expense of quality. This is how you come to a solution from a single source for which all the quality standards are implemented until the very end."

TPAQS, the IT solution that supports the entire laboratory activity at all the TPA locations has almost always succeeded in working with such uncompromising standards for the past nearly 20 years.

"At first I acted as a 'one-man team' responsible for the design, development, quality assurance and maintenance of TPAQS based on Oracle Forms. This of course did not help to dilute the originally defined design specifications," Reinhard Stöger recalls. "PITSS.CON already expanded the Oracle development environment in 2005 when the requirements, e.g. towards internationalism, and the team were expanded. This meant that early on we had a development platform for Oracle Forms and Reports with which we could efficiently implement our constructive QA measures as well as routine activities during migrations."

The laboratory system now contains over 170 forms, 190 reports with about 470 tables and well over 200 views, without which it would no longer be possible to imagine the daily laboratory activities at TPA. All the data from samples and field trials are entered in TPAQS. In addition to test reports and statistics for customers, the entire testing equipment management and document management are displayed in TPAQS.

Initially developed for the headquarters in Vienna, the application grew together with the company. As an independent laboratory organization, TPA has offices at more than 130 locations in over 20 European countries. Most of the time there are between 50 and 90 users online at the same time who have come to appreciate the quality of the application.



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## Those Who are Good, Want to Get Better

Although Reinhard Stöger was convinced that TPAQS lacked nothing in terms of quality, he was interested in the new module PITSS.CON Source Code Analytics for quality assurance right from the start. PITSS.CON Source Code Analytics offers more than just the possibility to evaluate the quality of an application on the basis of four different, objectively verifiable metrics. It supports the development in very effectively locating any existing weaknesses so that they can then be specifically fixed.

“I wanted to know how maintainable, i.e. good, our application really is from an external perspective, and to systematically search for possible risk factors” says Stöger describing his expectations from PITSS.CON Source Code Analytics. “I am not familiar with the different metrics in detail, however I welcome the fact that different analysis are possible since they can be used to evaluate a broad spectrum. What really makes us happy is that the PITSS consultant confirmed that TPAQS achieved above average values in all four analysis.”

In a one-day workshop in Vienna, the application was subjected to a comprehensive evaluation. After an introduction by the consultant, every option offered by PITSS.CON Source Code Analytics was used to analyze the approximately 23,000 development objects. The outstanding results of the analysis surprised the PITSS staff and thrilled the TPA staff.

## Investment Security Thanks to Top Quality

The results for maintainability alone clearly show just how well TPAQS performed. The average values typical for Oracle Forms applications that have grown over several years are 7-15% no longer maintainable code, 15-25% code that can only be edited by very experienced staff, and the remainder which is considered maintainable. Despite having performed numerous quality assurance projects, the PITSS experts had never seen anything like the outstanding values for TPAQS with 1% not, 7% complex, and 92% well maintainable code.

“The only discernible deficit in the application was the somewhat low comment ratio, i.e. the degree of code documentation, but this figure was also well above the average,” says Christian Wille, Senior Consultant at PITSS, summarizing the results. “We were therefore able to very quickly deal with the few necessary optimizations at the workshop.” Despite the good results, Reinhard Stöger also sees use for PITSS.CON Source Code Analytics in the future development of TPAQS and does not regret the investment for the license.

“This analysis has provided us with useful information, for example on no longer used functions or tables that can be removed to further reduce complexity. The analysis only found a few weaknesses, but it is exactly these areas that can be highly risky and time-consuming under certain circumstances. We can now be pro-active in these areas and optimize them before any pending changes in the future.”

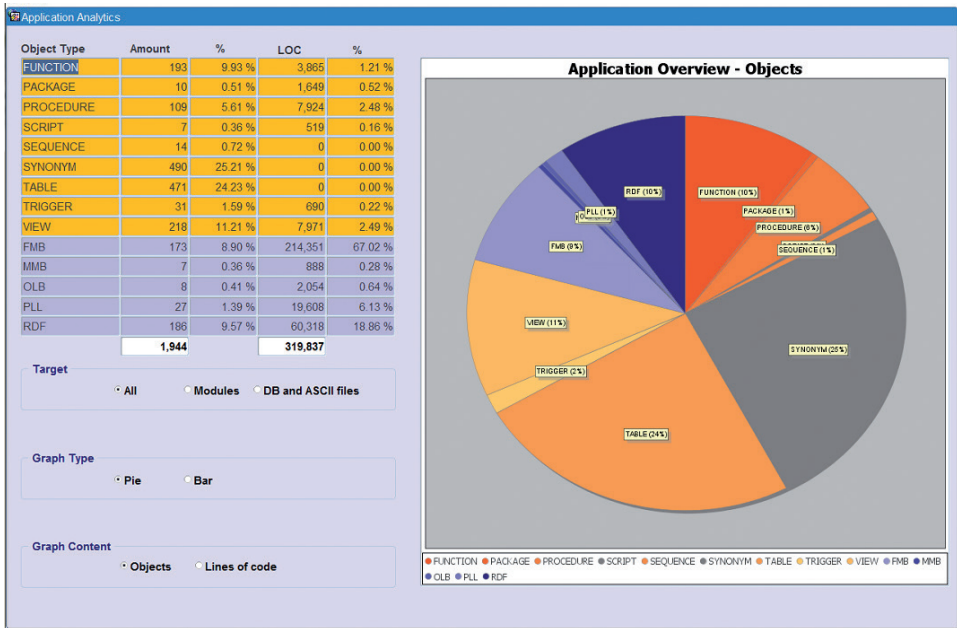
For TPA, the investments in quality assurance over the years have definitely paid off and secured the long-term development of TPAQS. On one hand, TPA relies on Oracle’s continual further development of Forms and Reports, and on the other hand, the high-quality implementation of TPAQS ensures that maintenance and further development can be implemented in the future with a streamlined development team and that they are well prepared for new technologies and are thus future-proof.



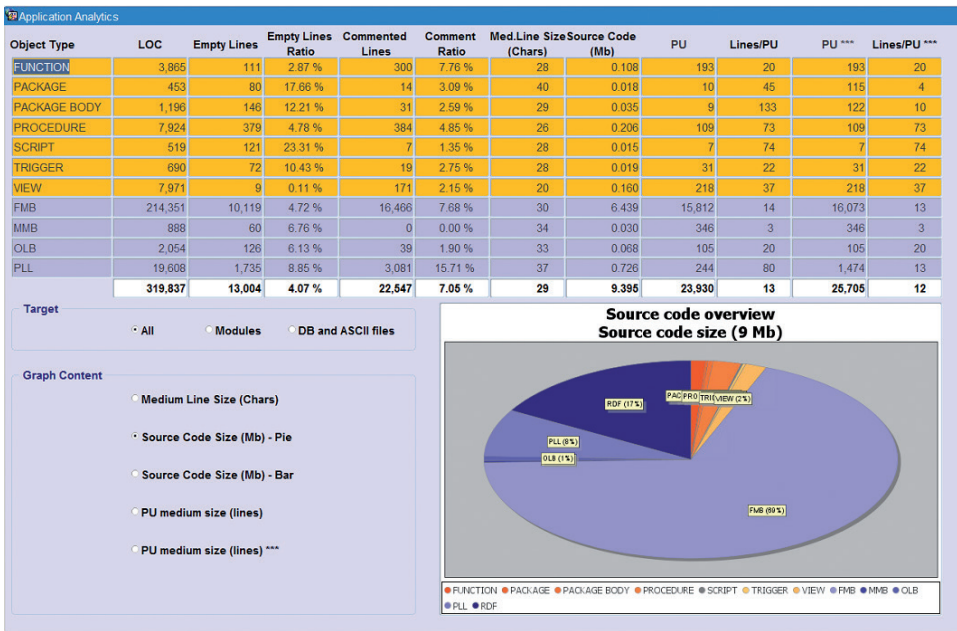
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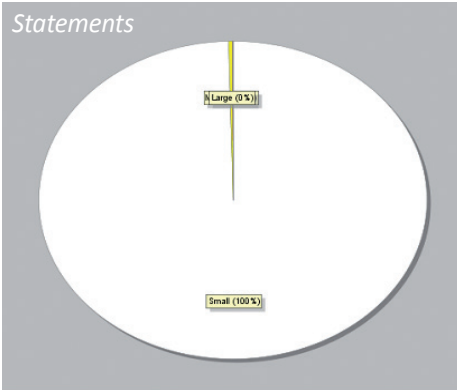
# TPA Live System - Evaluations with PITSS.CON



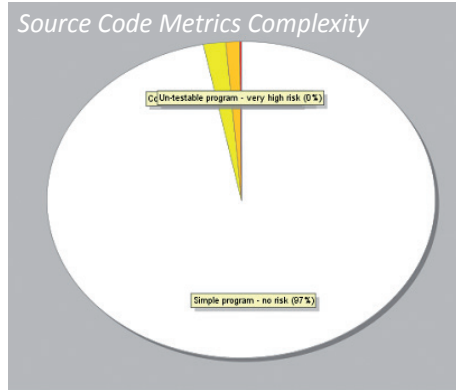
Overview of the Entire Application: Distribution of the Objects



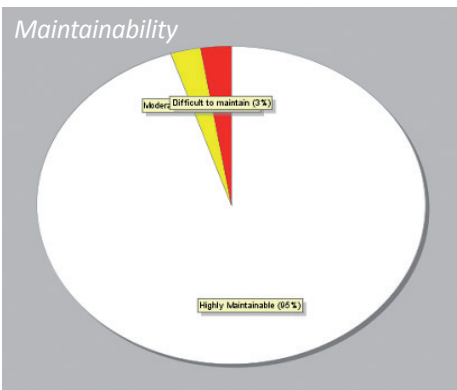
Overview of the Source Code: Oracle Forms Module, Lines PU, Comment Ratio



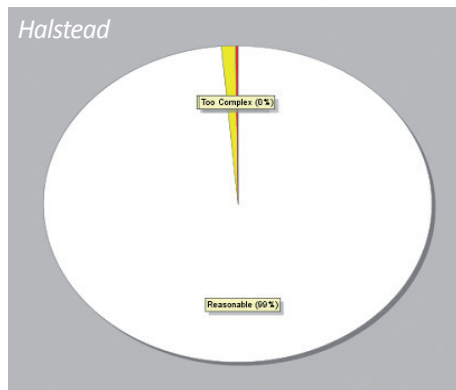
○ Small ● Medium ● Large



○ Simple program - no risk ● Complex program - moderate risk ● Very complex program - high risk ● Un-testable program - very high risk



○ Highly Maintainable ● Moderate Maintainability ● Difficult to maintain



○ Reasonable ● Challenging ● Too Complex



TPA in Vienna

### Source Code Metrics

### PITSS GmbH

#### PITSS Headquarters

Zettachring 2  
70567 Stuttgart  
Germany  
Phone +49 (711) 728 752-00  
Fax +49 (711) 728 752-01  
E-Mail [headquarters@pitss.com](mailto:headquarters@pitss.com)

#### PITSS EMEA & AP

Königsdorfer Str. 25  
82515 Wolfratshausen  
Germany  
Phone +49 (8171) 21 62-10  
Fax +49 (8171) 21 62-11  
E-Mail [sales@pitss.com](mailto:sales@pitss.com)

#### PITSS UK

314 Midsummer Boulevard  
Milton Keynes, MK9 2UB  
United Kingdom  
Phone +44 (1908) 440 016  
Fax +44 (1908) 847 401  
E-Mail [sales.uk@pitss.com](mailto:sales.uk@pitss.com)

#### PITSS America

1050 Wilshire Dr., Suite 110  
Troy, MI 48084  
USA  
Phone +1 (248) 740 0935  
Fax +1 (248) 740 1556  
E-Mail [info@pitssamerica.com](mailto:info@pitssamerica.com)



### About TPA

The TPA Gesellschaft für Qualitätssicherung und Innovation GmbH is a member of the STRABAG SE Group, one of Europe's largest construction companies, the Building Materials Competence Center for Asphalt, Concrete, Earthworks and Geotechnical Engineering. With more than 780 employees at over 130 locations in 20 European countries, TPA is one of the largest private laboratory companies in Europe.

Business: Industry

[www.tpaqi.com](http://www.tpaqi.com)



PITSS is the leading provider of software & services for modernizing and effectively managing Oracle applications. The PITSS Group was established in 1999 and has gained international recognition with over 1,000 customers and a multitude of successful Oracle projects. PITSS is an Oracle Gold partner and, as a member of the Oracle Modernization Alliance (OMA), is the only Oracle Forms Migration partner for automated migrations. With sites in Stuttgart (HQ), Wolfratshausen near Munich, Bielefeld (Germany), Milton Keynes (UK) and Troy (USA) as well as certified international partners, the company successfully provides support for IT projects of medium sized companies, large enterprises and public contractors across the globe.