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November / December 2010 | £4 / €5 | v2.0 | number 6 |

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Tools and the last six years

by Erik van Veenendaal

What tool types do testers actually use and how satisfied are they?



Erik van Veenendaal presents the findings of his latest survey and looks back to his previous one

In January 2004 I carried out a survey on the use of testing tools, published in issue 17 of this magazine and still available at <http://professionaltester.com/magazine/backissue/17/ProTesterJan2004-vanVeenendaal.pdf>. This year I repeated the exercise, aiming to discover whether and where progress has been made: over 500 test organizations throughout Europe participated. To help make sense of a changing world, I have separated the results by test object type: technical applications (industry, embedded software, telecoms etc - abbreviated as "TA") and information systems (banking, insurance, government etc, abbreviated "IS") as well as tool type. I hope the results and my analysis will be valuable to testers wanting to benchmark their current tool use and looking for new tools, and to tool providers and vendors. Comparable results from 2004 are shown in {curly brackets}. No less than 85% of responding organizations are using at least one tool {2004: 72%}.

Test management

The tools in this broad category provide support for either or both of "the management of tests" and "managing the testing process". These in turn can be broken into specific areas and table 1 gives the "implementation" – the number of organizations using a dedicated test tool (created in house or acquired) divided by the total number surveyed – for each.

It will be noted that uptake of these tool types is significantly greater for TA than for IS: in fact many more tools are available for TA testing. Incident management (IM) tools have shown the greatest growth, but I find it disconcerting that around 20% of

respondents are still doing IM with no dedicated tool. In my opinion the low implementation of requirement management tools reflects the weakness of work with requirements in general – a long-standing complaint of testers – and initiatives aimed at changing this are to be supported. See for example the qualification provided by the International Requirements Engineering Board (<http://certified-re.de>).

Static analysis

Again the implementation for TA (47%) is good and that for IS poor (12%). This is due to lack of support for programming languages commonly used in IS. Overall implementation has grown to 29% {2004: 12%}

Test design and specification

Implementation for TA 15%, for IS 22%, overall 18% {2004: 15%}. This includes both tools used only or primarily to generate test conditions, cases or inputs and the facilities for applying test techniques included in many test execution tools. At acceptance and system test levels, these categories are still somewhat niche: there may be opportunities for tool providers to better implement the techniques used manually by test analysts. At lower levels, tools that generate tests based on and aiming to increase coverage of production code are improving and becoming popular fast. That might be related to recent trends towards developer-led processes such as agile and test-driven development.

Test execution and checking

As one would expect (and hope, given the importance of its vendors to the testing industry), usage of the most popular type of test tool has grown enormously (table 2). The business need for high quality regression testing of larger and more

| % | TA | IS | overall 2010 | overall 2004 |
|--------------------------|----|----|--------------|--------------|
| Test management | 32 | 37 | 34 | 35 |
| Requirement management | 29 | 9 | 19 | not surveyed |
| Incident management | 83 | 74 | 78 | 51 |
| Configuration management | 76 | 39 | 56 | 37 |

Table 1: Implementation of test management tools

| % | TA | IS | overall 2010 | overall 2004 |
|----------------------|----|----|--------------|--------------|
| Test execution | 44 | 52 | 48 | 29 |
| Test comparator | 30 | 23 | 26 | 24 |
| Coverage measurement | 21 | 4 | 12 | 9 |

Table 2: Implementation of test execution and checking tools

| % | TA | IS | overall 2010 | overall 2004 |
|---------------------|----|----|--------------|--------------|
| Dynamic analysis | 34 | 7 | 17 | 14 |
| Performance testing | 40 | 27 | 33 | 25 |
| Monitoring | 36 | 20 | 27 | 24 |

Table 3: Implementation of dynamic analysis, performance testing and monitoring tools

| | control | quality | efficiency | {position in 2004} |
|----------------------------|---------|---------|------------|--------------------|
| 1 test execution | ★ | ★★ | ★★★ | 1 |
| 2 defect management | ★★★ | ★★ | ★★ | 2 |
| 3 configuration management | ★★★ | ★ | | 4 |
| 4 test management | ★★★ | ★★ | ★★ | - |
| 5 test design | | ★★ | ★★ | - |

Table 4: favourite tools

complex systems is still growing. Also, more testers have learned how to implement data-driven and keyword-driven automation, making the use of automated execution more efficient and less risky. Almost all of these tools include facilities to verify results, which may explain the relatively slower growth in standalone test comparators. Nevertheless, the additional use of these should be considered carefully by test organizations.

Uptake of test coverage tools (one of my favourites) is still low. Again we see the gap between the implementation ratio in TA and IS, and for the same reasons. There is obvious opportunity for providers to bring TA (including safety-critical) style coverage measurement techniques to IS testing.

Dynamic analysis, performance and monitoring

Growth in the use of these is disappointingly slow, to the detriment of business and users. Why? That is a vital and unanswered question not only for tool users, providers and vendors: but for everyone. The results are in table 3.

User satisfaction

According to this survey testers appreciate the tools they use today far more than in 2004. The change is shown in figure 1 and speaks for itself.

Favourite tools

For testers, this is the most interesting question in the survey. The best guide you can get to what you should be evaluating is the practical experiences of fellow

testers. Table 4 shows the degree of benefit of three types to testing the participating testers perceive, corrected for different implementation levels. Since 2004, the top two have not changed; but coverage measurement tools have disappeared from the top four, replaced by test management. That does not surprise me, as these tools have improved a great deal, especially in the important area of collaboration of geographically-divided people. However the new cult following gained by test design and specification tools is surprising, encouraging and perhaps significant.

Shelfware

The bogeyman of test tools is still with us. 28% of responding test organizations said they had tools still licensed but no longer in use {2004: 26%}. However earlier surveys in the 1990s reported even higher levels than this. So, what tool types are most likely to end up as shelfware now?

Figure 2 shows that the most used and most popular tool type – test execution – is also the most likely to fail. Perhaps this is due to inability of the purchasing organizations to quantify, or unwillingness to devote, the resources needed to implement it successfully? Or are these tools simply oversold? We can only speculate.

Static analysis and requirements

management tools appear to be in jeopardy. They have both low implementation and high shelfware potential. I suspect it is hard to get management buy-in to these: static analysis tools are affected adversely by technical change, and requirements management by immaturity of the requirements process itself. Solutions are needed if the benefit of these types of tool, which is obvious to many testers, is to be retained.

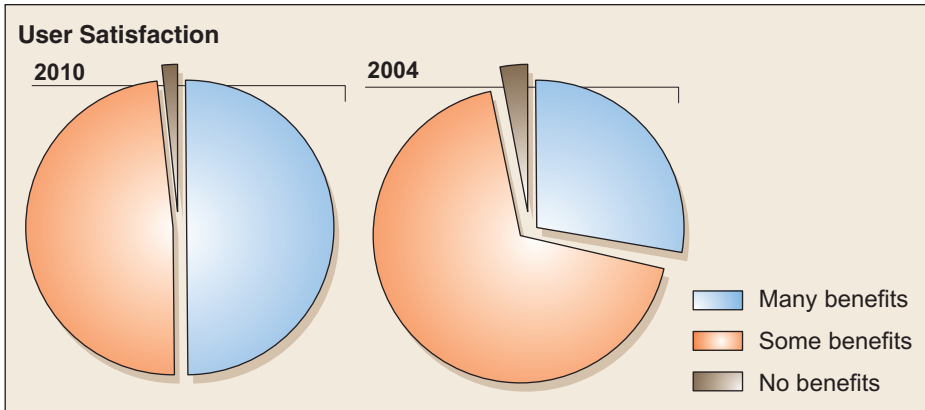


Figure 1: user satisfaction now and in 2004

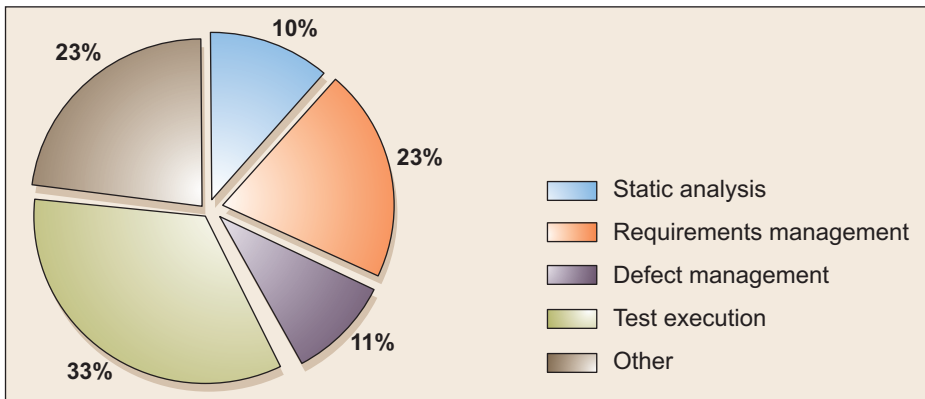


Figure 2: shelfware by tool type

The challenge that remains

Implementation of tools is growing. So is the satisfaction of the testers who use them. Some tool types – beloved and believed in by the testers who use them – are not being used where they should be. The occurrence of dismal failures to implement tools after purchase is not improving. Everyone involved needs to think carefully about why that is and, from their own point of view, what might be the solution ■

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