Report on the
Cash Flow Testing Software
Web Survey

Prepared for the Society of Actuaries

by

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March 15, 2005

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Acknowledgment

We gratefully acknowledge the significant contribution made by the members of the project oversight group:

Gang Ma, Chair
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Steven Siegel, SOA Research Actuary
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**Executive Summary**

This survey on Cash Flow Testing (CFT) software was distributed on May 17, 2004 and ended on June 18, 2004 with the goal of producing a report that will serve as a reference for comparing the available CFT packages and lead to better software and modeling techniques. A brief summary of the survey results is shown below. Confidence intervals that appear in the results have been calculated at a 95% level are based on the number of respondents to a particular survey question.

- The most frequently used CFT packages are:
  - TAS, PTS, MG ALFA, AXIS, MoSes, BondEdge.
- 27.8% ± 7.61% respondents worked for companies with admitted assets greater than 10 billion, 27.1% ± 7.55% for companies with admitted assets between 2 and 10 billion, and 42.1% ± 8.39% for companies with admitted assets less than 2 billion.
- 78.3% ± 7.11% CFT software users have utilized the packages for more than 3 years.
- The reasons for stopping use of some other CFT packages mostly are “software features and (or) functionality could no longer meet needs” and “software was difficult to customize or work with”.
- CFT packages are frequently used for life products and annuity products.
- Most CFT packages are frequently applied in bonds and mortgage related assets.
- Besides CFT, the software packages are mainly used for the purpose of new product pricing, inforce profitability, and earnings projection.
- Overall the most useful features are: open code (ability to change source code), ability to import data from a variety of other applications (e.g. spreadsheets, text files), ability to export results to Excel or other spreadsheet applications.
- 45.3% ± 8.28% of the respondents need third party software like Excel, APL, or BondEdge.
- Telephone support, help screens, email responses to questions are the main supports provided.
- Overall, 57% ± 8.68% respondents need more than 2 weeks training on the original CFT software packages.
- Most users need only less than half a week training on a typical update/new release before becoming knowledgeable.
- Overall more than half of the respondents are satisfied with the vendor’s future plan.
- Overall, areas that vendors need to improve are: features, functionality and flexibility of packages; processing speed; coverage of assets.
Introduction

Cash Flow Testing (CFT) refers to analysis, which is used to support the Asset Adequacy Analysis behind the Actuarial Opinion for U.S. companies, and analysis, which is used to determine the ALM Provision for Adverse Deviations in applying the Canadian Asset Liability Method to determine reserves for Canadian companies.

CFT is an important responsibility of actuaries in the insurance industry. Actuaries are routinely called upon to utilize CFT to determine reserve adequacy, evaluate investment strategies, and project future profitability as well as a variety of other purposes. Periods of economic change coupled with recent national attention on corporate solvency ensure a continually growing need for this function. Additionally, potential changes in regulations governing actuarial opinions could significantly expand the number of companies using cash flow testing to satisfy opinion requirements.

For actuaries to make well-informed choices on suitable software packages for CFT, they need comparative data. Currently, there is a shortage of information readily available in order to make intelligent software purchase decisions.

At the same time, an increasing number of vendors have responded to the need for efficient applications of CFT and have created specially designed modules within their software packages. The appeal of such software packages is easily apparent to the practicing actuary. Consistent with the increasing trend of usage of CFT, it is anticipated that more and more vendors will enter this market.

In response, a survey of CFT software package users was conducted. The goal of this survey was to produce a report that will serve as a reference for comparing the available software packages. In addition, it is hoped that production of such a report will, in turn, lead to better software and modeling techniques.

Survey Design and Implementation

Between January 2003 and May 2004, the survey questionnaire was produced, and a website was created to facilitate completion of the questionnaire. The Society of Actuaries provided a list of 378 companies that use Cash Flow Testing software in Canada and the United States. The survey officially started on May 17, 2004, when the first introduction letter was emailed by the SOA, and the first contact letter was emailed by Statlab. The companies were asked to provide names of CFT software users who were willing to complete the questionnaire. Statlab sent reminders to non-respondents on May 26th 2004. On June 9th a letter was sent to extend the deadline to June 18th, on which the survey officially closed.
Response

As indicated above, 378 companies were contacted. As of the deadline, 110 companies with 128 CFT users participated in the survey. Thirty-four companies responded that they were not eligible for the survey. The response rate was 38%.

The respondents of this survey can be:

- Multiple users of a particular Cash Flow Testing software package within a company
- An individual user or consultant currently using one or more than one Cash Flow Testing software package
- Individual consultants using a particular software package for more than one company

Among the 110 companies, 101 companies had 1 respondent; 6 companies had 2 respondents; the remaining 3 companies had 3, 4 and 8 respondents, respectively. Among the 128 individual respondents, 109 respondents employed 1 package; 15 respondents utilized 2 packages; 4 respondents used 3 packages.

The following results count respondents based on the number of packages for which they provided information, rather than the number of users who responded. In other words, an individual user may be counted more than once if multiple packages were selected.

Summary of Results

The following four subsections give a summary of the survey results. Detailed results for each survey question are presented in the graphs and tables in the appendix.

1. Customer Background Information

Approximately 96% of respondents were from insurance companies. Sixty-two respondents (or 46.6%) were appointed actuaries for their companies. Only 2 respondents were directly affiliated with the CFT software vendors, and they were excluded from the analysis.

The CFT packages used by respondents are: TAS (58 respondents), PTS (22), MG ALFA (19), AXIS (8), MoSes (7), BondEdge (5), AVE(4), Prophet(2), Rimcon(2), ARCVAL(1), Bambrough (1), PolySys(1), Rex(1), Yieldbook(1), and software systems developed in house (6). BondEdge, AVE, Rimcon, ARCVAL, Bambrough, PolySys, Rex, Yieldbook were not listed in the survey question and were inputted by the respondents. Brief introductions to these packages are given after question 4 in the appendix. In the results provided in the appendix, packages used by fewer than 5 respondents are included in the “other” group.
The survey results indicate that 52.3% of respondents applied CFT packages for only one company, 19.7% for two companies and 18.9% for 3 companies. Overall, 42.1% of the respondents worked for companies with admitted assets less than $2 billion, 27.8% for companies with admitted assets greater than or equal to $10 billion and another 27.1% for companies with assets between $2 and $10 billion. These percentages are significantly different for appointed actuaries and non-appointed actuaries.

A large proportion (78.3%) of respondents had used CFT software for more than three years.

Twenty-nine out of 133 respondents were using other CFT software in the past, but had switched packages for one or more reasons. Among them, 12 had switched to TAS, and 9 to MG. Most of the users attributed that change to software features and their functionality, while some referred to poor customization and poor customer service.

CFT packages were used for various kinds of products. Overall, 82% of respondents applied CFT software to life products, 71.9% to annuity products, 28.1% to health products, 15.1% to pension products.

Among assets such as bonds, collateralized mortgage obligations, derivatives, equities, hedge funds, etc., CFT is employed the most for bonds and mortgages, indicated by 69.9% and 45.9% of respondents, respectively.

In addition to CFT, the software packages are mainly used for the purpose of new product pricing, inforce profitability, and earnings projection. TAS, PTS, and MG ALFA are used for almost all categories.

2. Cash Flow Testing Software Features

Overall the most useful features are open code (ability to change source code), ability to import data from a variety of other applications (e.g. spreadsheets, text files, etc.), and ability to export results to Excel or other spreadsheet applications.

Many respondents (45.3%) indicated that they need third party software such as Excel, APL, or BondEdge. Excel is the most common.

3. Training

The main types of support provided were telephone support, which was used by 71.2% of respondents, help screens, which were used by 66.2% of respondents, and email responses to questions, which were provided to 61.9% of respondents.

Overall, 57% of respondents needed more than 2 weeks training on the original CFT software packages. Most users need less than half a week of training on a typical update/new release before becoming knowledgeable.
4. Satisfaction with Software and Vendor

Respondents were asked to rate the performance of CFT packages using a 5-point scale. For this scale, 1 means very dissatisfied, 3 means neutral, 5 means very satisfied.

The following table shows the frequency of overall satisfaction and user friendliness ratings.

Frequency: (Blank cells have 0 respondents)

<table>
<thead>
<tr>
<th>Packages</th>
<th>Overall Satisfaction</th>
<th>User Friendliness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>AXIS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BondEdge</td>
<td>1 3 1</td>
<td>2 2 1</td>
</tr>
<tr>
<td>MG ALFA</td>
<td>4 8 2</td>
<td>2 3 8 4</td>
</tr>
<tr>
<td>MoSes</td>
<td>1 2 1</td>
<td>1 3</td>
</tr>
<tr>
<td>PTS</td>
<td>2 4 9 2 1</td>
<td>2 3 10 3 2</td>
</tr>
<tr>
<td>TAS</td>
<td>3 19 24 4</td>
<td>1 4 18 23 6</td>
</tr>
<tr>
<td>In house</td>
<td></td>
<td>4 1</td>
</tr>
<tr>
<td>Other</td>
<td>11 26 11</td>
<td>4 14 26 10</td>
</tr>
</tbody>
</table>

The frequencies of rating other features are given in question 19 of the appendix.

The mean satisfaction scores for some features of the more frequently used packages are:

<table>
<thead>
<tr>
<th>Features</th>
<th>MG</th>
<th>PTS</th>
<th>TAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction</td>
<td>3.9</td>
<td>2.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Ease of customizing</td>
<td>4.1</td>
<td>2.6</td>
<td>2.4</td>
</tr>
<tr>
<td>User friendliness</td>
<td>3.8</td>
<td>3.0</td>
<td>3.6</td>
</tr>
<tr>
<td>Ability to integrate with pricing</td>
<td>4.4</td>
<td>3.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Processing speed</td>
<td>3.7</td>
<td>2.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Support startup</td>
<td>4.4</td>
<td>2.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Approximately 52% of the respondents are satisfied with the vendors’ plans for the future, 41% do not know, and about 7% of the respondents are not happy with the vendors’ plans.

Overall, areas that vendors need to improve are (1) software features, functionality and flexibility, (2) processing speed, and (3) coverage of assets.
Appendix: Graphs and Tables for Individual Survey Questions

The pages which follow provide graphical and tabular summaries of the responses for each survey question. Where aggregate results are provided for all packages combined, the percentage of respondents choosing each response is shown. However, for individual packages, the numbers are too small for percentages to be appropriate, and the actual number of respondents is shown. In either case, the number in parentheses following each response is the number of respondents who selected the response.

SECTION 1: BACKGROUND INFORMATION

1. Which of the following best describes your employment situation? Please select one.

- Insurance company employee
- Reinsurance company employee
- Actuarial consultant
- Other, please specify

![Employment Situation of CFT Users]

2. Are you employed by or affiliated with a cash flow testing software vendor?

- Yes (go to 3)
- No (go to 4)
3. Which of the following best describes your affiliation with the software vendor? Please select as many as applicable.

<table>
<thead>
<tr>
<th>Affiliation</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Founder / Owner</td>
<td>0</td>
</tr>
<tr>
<td>Partner / Principal / Senior Manager</td>
<td>2</td>
</tr>
<tr>
<td>Actuarial Consultant</td>
<td>2</td>
</tr>
<tr>
<td>Software Programming</td>
<td>0</td>
</tr>
<tr>
<td>Software Sales / Marketing</td>
<td>0</td>
</tr>
<tr>
<td>Other, please specify</td>
<td>0</td>
</tr>
</tbody>
</table>

4. Please select up to 3 packages that you are currently using and with which you are most familiar. Please note that you must answer this question in order to complete the rest of the survey.

- AXIS – GGY Inc.
- MoSes – Classic Solutions Risk Management
- Prophet – Deloitte Touche
- LEAPPS – Lewis & Ellis
- MG ALFA – Milliman
- PTS – SS&C Technologies
- TAS – Tillinghast-Towers Perrin
- Global CAP – Tillinghast-Towers Perrin
- ProVal – Winkelvoss Technologies

If you are using a Cash Flow Testing software package that is not listed above, please add it here. Short name:  
Full name:  .
Note: AVE, ARCVAL, Bambrough, BondEdge, PolySys, Rex, Rimcon, Yieldbook were not listed in the responses and were inputted by the users. Packages with less than 5 respondents such as AVE, ARCVAL, Bambrough, PolySys, Prophet, Rex, Rimcon, Yieldbook are categorized into the “Other” group.
5. Are you the appointed actuary for your company or the companies with which you consult?

Yes
No

6. Please indicate the number of companies for which you use cash flow testing software.

1  2  3  4  5  More than 5
### Frequency: (Blank cells have 0 respondents)

<table>
<thead>
<tr>
<th>Packages</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>more</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXIS</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>BondEdge</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>MG ALFA</td>
<td>10</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>MoSes</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>PTS</td>
<td>11</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>TAS</td>
<td>27</td>
<td>11</td>
<td>11</td>
<td>2</td>
<td>3</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>In house</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>26</td>
<td>25</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>131</td>
</tr>
</tbody>
</table>

7. What are the total admitted assets of the company(ies) for which cash flow testing is currently being performed?

Admitted Assets < $2 billion  
$2 billion <= Admitted Assets < $10 billion  
Admitted Assets >= $10 billion  
Don’t know  

AA: Admitted Assets

![Bar chart showing admitted assets distribution across different packages.](chart.png)
Percentages of responses provided by appointed actuaries and non-appointed actuaries.

![Bar chart showing percentages of responses by appointed and not appointed actuaries for different asset sizes.]

- **AA < $2 billion**: 59.7% appointed, 38% not appointed, 26.8% don't know.
- **$2 billion <= AA < $10 billion**: 24.2% appointed, 29.6% not appointed, 59.7% don't know.
- **AA >= $10 billion**: 16.1% appointed, 38% not appointed, 24.2% don't know.
- **Don't know**: 5.6% appointed, 38% not appointed.
8. How many years have you been using the current Cash Flow Testing Software package(s)? (Single Answer for multiple software packages; go to 9)

<table>
<thead>
<tr>
<th>Years</th>
<th>Package one</th>
<th>Package two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than 1 year but less than 3 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than 3 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual Packages</th>
<th>Frequency</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AXIS(8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BondEdge(5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MG ALFA(18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MoSes(5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTS(22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAS(55)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In house(5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other(14)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. Are there Cash Flow Testing software package(s) that you no longer use? (Single)
   Yes (go to 10)
   No (go to 11)
10. If other software packages have been used in the past, please choose the reason(s) for the change (you may select more than one).

- Software features and/or functionality could no longer meet needs
- Software was difficult to customize or work with
- Software had too many errors or bugs
- Vendor’s customer service was not good
- Software cost became too high
- Didn’t like the direction of the software
- Changed employers
- Don’t know
- Other, please specify

Note: There are 29 respondents in total who had changed software packages. The percentages are based on the total respondents (29), and a respondent can answer more than once.

SECTION 2: CASH FLOW TESTING SOFTWARE FEATURES

11. The Cash Flow Testing software package(s) is (are) currently being used for which of the following insurance products?

<table>
<thead>
<tr>
<th>Insurance Products</th>
<th>Package one</th>
<th>Package two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annuity products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pension products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Used for Insurance Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, please specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Note: The percentages are based on the total respondents (139), and respondents may apply a package to more than one product.
12. The Cash Flow Testing software package(s) is (are) currently being used for which of the asset categories (you may select more than one)?

<table>
<thead>
<tr>
<th>Package one</th>
<th>Package two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Backed Securities</td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>48.2</td>
</tr>
<tr>
<td>Collateralized Mortgage Obligations</td>
<td>48.2</td>
</tr>
<tr>
<td>Commercial Mortgage Backed Securities</td>
<td>44.6</td>
</tr>
<tr>
<td>Derivatives</td>
<td>33.8</td>
</tr>
<tr>
<td>Equities</td>
<td>44.6</td>
</tr>
<tr>
<td>Hedge Funds</td>
<td>72.7</td>
</tr>
<tr>
<td>Mortgage Backed Securities</td>
<td>33.8</td>
</tr>
<tr>
<td>Mortgages</td>
<td>15.8</td>
</tr>
<tr>
<td>Real Estate</td>
<td>18.0</td>
</tr>
<tr>
<td>Not Used for Assets</td>
<td>0.7</td>
</tr>
<tr>
<td>Other, please specify</td>
<td>12.2</td>
</tr>
</tbody>
</table>

Note: The percentages are based on the total respondents (139), and respondents may apply a package to more than one asset category.
Other (with 14 respondents)

- Asset Backed Securities: 3 respondents
- Bonds: 9 respondents
- Collateralized Mortgage Obligations: 3 respondents
- Commercial Mortgage Backed Securities: 3 respondents
- Derivatives: 1 respondent
- Equities: 4 respondents
- Hedge Funds: 0 respondents
- Mortgage Backed Securities: 6 respondents
- Mortgages: 8 respondents
- Real Estate: 6 respondents
13. Besides Cash Flow Testing, for what other purposes are the software package(s) being used (you may select more than one)? (Multiple answers for multiple software packages, go to 14)

- **Pricing**
  - Package one
  - Package two
  - New product pricing
  - Inforce profitability

- **Illustration**
  - Package one
  - Package two
  - Sales illustration
  - Illustration compliance

- **Financial reporting/management**
  - Package one
  - Package two
  - Statutory reporting
  - GAAP reporting
  - Reporting based on other accounting principles
  - Earnings projection

- **Valuation**
  - Package one
  - Package two
  - Reserving
  - Embedded value
  - Appraisal value

- **ALM and Risk management**
  - Package one
  - Package two
  - Asset allocation
  - Yield enhancement
  - Asset credit policy
  - Managing interest rate duration risk
  - Managing interest rate convexity risk
  - Managing spread duration risk
  - Managing equity risk
  - Cash flow matching strategy
  - Economic capital or risk based capital strategy

Note: The percentages in following graph for this question are based on the total respondents (139), and respondents may use a package for more than one purpose.
Economic capital or risk based capital strategy (14)
Cash flow matching strategy (44)
Managing equity risk (6)
Managing spread duration risk (16)
Managing interest rate convexity risk (18)
Managing interest rate duration risk (52)
Asset credit policy (8)
Yield enhancement (8)
Asset allocation (28)
Reserving (34)
Embedded value (34)
Appraisal value (18)
Earnings projection (70)
Inforce profitability (75)
Sales illustration (7)
Illustration compliance (34)
Statutory reporting (33)
GAAP reporting (37)
Reporting based on other accounting principles (11)
New product pricing (88)
<table>
<thead>
<tr>
<th>Topic</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>New product pricing</td>
<td>6</td>
</tr>
<tr>
<td>Inforce profitability</td>
<td>6</td>
</tr>
<tr>
<td>Sales illustration</td>
<td>0</td>
</tr>
<tr>
<td>Illustration compliance</td>
<td>1</td>
</tr>
<tr>
<td>Statutory reporting</td>
<td>5</td>
</tr>
<tr>
<td>GAAP reporting</td>
<td>4</td>
</tr>
<tr>
<td>Reporting based on other accounting principles</td>
<td>2</td>
</tr>
<tr>
<td>Earnings projection</td>
<td>5</td>
</tr>
<tr>
<td>Reserving</td>
<td>7</td>
</tr>
<tr>
<td>Embedded value</td>
<td>2</td>
</tr>
<tr>
<td>Appraisal value</td>
<td>0</td>
</tr>
<tr>
<td>Asset allocation</td>
<td>2</td>
</tr>
<tr>
<td>Yield enhancement</td>
<td>1</td>
</tr>
<tr>
<td>Asset credit policy</td>
<td>0</td>
</tr>
<tr>
<td>Managing interest rate duration risk</td>
<td>5</td>
</tr>
<tr>
<td>Managing interest rate convexity risk</td>
<td>1</td>
</tr>
<tr>
<td>Managing spread duration risk</td>
<td>1</td>
</tr>
<tr>
<td>Managing equity risk</td>
<td>0</td>
</tr>
<tr>
<td>Cash flow matching strategy</td>
<td>4</td>
</tr>
<tr>
<td>Economic capital or risk based capital strategy</td>
<td>1</td>
</tr>
</tbody>
</table>
Economic capital or risk based capital strategy
Cash flow matching strategy
Managing equity risk
Managing spread duration risk
Managing interest rate convexity risk
Managing interest rate duration risk
Asset credit policy
Yield enhancement
Embedded value
Appraisal value
Asset allocation
Reserving
Earnings projection
Reporting based on other accounting principles
GAAP reporting
Statutory reporting
MG ALFA (with 19 respondents)

- New product pricing: 14
- Inforce profitability: 11
- Sales illustration: 0
- Illustration compliance: 4
- Statutory reporting: 1
- GAAP reporting: 5
- Reporting based on other accounting principles: 1
- Earnings projection: 8
- Reserving: 3
- Embedded value: 5
- Appraisal value: 1
- Asset allocation: 4
- Yield enhancement: 4
- Asset credit policy: 1
- Managing interest rate duration risk: 6
- Managing interest rate convexity risk: 3
- Managing spread duration risk: 2
- Managing equity risk: 0
- Cash flow matching strategy: 8
- Economic capital or risk based capital strategy: 2

Frequency
Economic capital or risk based capital strategy
Cash flow matching strategy
Managing equity risk
Managing spread duration risk
Managing interest rate convexity risk
Managing interest rate duration risk
Asset credit policy
Yield enhancement
Reporting based on other accounting principles
GAAP reporting
Statutory reporting
Illustration compliance
Sales illustration
Inforce profitability
New product pricing
PTS (with 22 respondents)
Economic capital or risk based capital strategy

Cash flow matching strategy

Managing equity risk

Managing spread duration risk

Managing interest rate convexity risk

Managing interest rate duration risk

Asset credit policy

Yield enhancement

Appraisal value

Asset allocation

Reserving

Embedded value

Sales illustration

Illustration compliance

Statutory reporting

GAAP reporting

Reporting based on other accounting principles

Earnings projection

New product pricing

Inforce profitability

Frequency
In house (with 6 respondents)

- New product pricing: 1
- Inforce profitability: 1
- Sales illustration: 0
- Illustration compliance: 0
- Statutory reporting: 2
- GAAP reporting: 1
- Reporting based on other accounting principles: 1
- Earnings projection: 4
- Reserving: 1
- Embedded value: 0
- Appraisal value: 1
- Asset allocation: 1
- Yield enhancement: 0
- Asset credit policy: 0
- Managing interest rate duration risk: 2
- Managing interest rate convexity risk: 0
- Managing spread duration risk: 0
- Managing equity risk: 0
- Cash flow matching strategy: 2
- Economic capital or risk based capital strategy: 0

Frequency
Other (with 14 respondents)

- New product pricing: 3
- Inforce profitability: 3
- Sales illustration: 0
- Illustration compliance: 0
- Statutory reporting: 7
- GAAP reporting: 4
- Reporting based on other accounting principles: 0
- Earnings projection: 8
- Reserving: 9
- Embedded value: 7
- Appraisal value: 3
- Asset allocation: 3
- Yield enhancement: 0
- Asset credit policy: 0
- Managing interest rate duration risk: 4
- Managing interest rate convexity risk: 2
- Managing spread duration risk: 0
- Managing equity risk: 1
- Cash flow matching strategy: 5
- Economic capital or risk based capital strategy: 1

Frequency
14. Choose up to 3 features below that you find most useful in the Cash Flow Testing software package(s).

Package one

- Open code (ability to change source code)
- Ability to import data from a variety of other applications (e.g. spreadsheets, text files, etc.)
- User defined queries
- Seriatim processing options
- Tools to value embedded options in assets and liabilities
- Stochastic projections
- Scenario generator
- Batch processing
- Distributed processing
- Customized reporting
- Ability to export results to Excel or other spreadsheet applications
- Don’t know
- Other, please specify

Package two

- Open code (ability to change source code)
- Ability to import data from a variety of other applications (e.g. spreadsheets, text files, etc.)
- User defined queries
- Seriatim processing options
- Tools to value embedded options in assets and liabilities
- Stochastic projections
- Scenario generator
- Batch processing
- Distributed processing
- Customized reporting
- Ability to export results to Excel or other spreadsheet applications
- Don’t know
- Other, please specify

---

All Packages Combined

<table>
<thead>
<tr>
<th>Feature</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open code</td>
<td>33.8</td>
</tr>
<tr>
<td>Ability to import data</td>
<td>49.6</td>
</tr>
<tr>
<td>User defined queries</td>
<td>5.8</td>
</tr>
<tr>
<td>Seriatim processing options</td>
<td>9.4</td>
</tr>
<tr>
<td>Tools to value embedded options</td>
<td>3.6</td>
</tr>
<tr>
<td>Stochastic projections</td>
<td>18.0</td>
</tr>
<tr>
<td>Scenario generators</td>
<td>15.8</td>
</tr>
<tr>
<td>Batch processing</td>
<td>15.8</td>
</tr>
<tr>
<td>Distributed processing</td>
<td>8.6</td>
</tr>
<tr>
<td>Customized reporting</td>
<td>10.8</td>
</tr>
<tr>
<td>Ability to export results</td>
<td>46.8</td>
</tr>
</tbody>
</table>

---

Percent
Note: The percentages are based on the total respondents (139), and respondents can choose up to 3 features for each package used.
Individual Packages

AXIS(8)
- Open code: 5
- Ability to import data: 5

BondEdge(5)
- Open code: 2
- Ability to import data: 1
- User defined queries: 0

MG ALFA(19)
- Open code: 11
- Ability to import data: 14

MoSes(7)
- Open code: 3
- Ability to import data: 2
- User defined queries: 1

PTS(22)
- Open code: 2
- Ability to import data: 9

TAS(58)
- Open code: 12
- Ability to import data: 17

In house(6)
- Open code: 2
- Ability to import data: 3

Other(14)
- Open code: 3
- Ability to import data: 5
15. Is third party software required (e.g. Excel, APL, etc.)?

No
Don’t know
Yes

If yes, please specify the software required.

---

**All Packages Combined**

- No (63): 49.2%
- Don’t know (7): 5.5%
- Yes (58): 45.3%

**Individual Packages**

- AXIS(8): 3
- BondEdge(5): 4
- MG ALFA(19): 12
- MoSes(7): 2
- PTS(22): 17
- TAS(58): 35
- In house(6): 2
- Other(14): 3

---

36
Third Party Software Needed -- All Packages Combined

Excel (29) 50.0%
APL (14) 24.1%
BondEdge (6) 10.3%
Other (14) 24.1%

Note: The percentages are based on the total respondents (58) who answered “Yes”. The respondent can choose more than one third party software for one CFT package.

Excel is Needed

AXIS (8) 3
MG ALFA (19) 3
MoSes (7) 1
PTS (22) 4
TAS (58) 9
In house (6) 2
Other (14) 7

Note: It appears that some respondents interpreted the question differently than it was asked. The question was phrased as what third party software was required. Based on the number of responses, it appears that some users were interpreting this question as whether they used (whether required or not) third party software.
SECTION 3. TRAINING

16. How is training/support provided?

Package one   Package two

Classroom training
On-line tutorials
Help screens
Written instruction manuals
Email responses to questions
Telephone support
Newsletters/updates via email, internet web sites, or mail
Don’t know
Other

Note: The percentages are based on the total respondents (139), and respondents can be provided more than one support.
17. How much training on the original Cash Flow Testing software package(s) was required before becoming knowledgeable enough to use it (them) for cash flow testing purposes?

<table>
<thead>
<tr>
<th>Package one</th>
<th>Package two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 week</td>
<td></td>
</tr>
<tr>
<td>Greater than or equal to 1 week but less than two weeks</td>
<td></td>
</tr>
<tr>
<td>Greater than or equal to 2 weeks but less than one month</td>
<td></td>
</tr>
<tr>
<td>Greater than 1 month</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td></td>
</tr>
</tbody>
</table>
### All Packages Combined

- **Training Time < 1 week**: 21, 16.8%
- **1 week <= Training Time < 2 weeks**: 19, 15.2%
- **2 weeks <= Training Time < 1 month**: 23, 18.4%
- **Training Time >= 1 month**: 34, 27.2%
- **Don’t know**: 28, 22.4%

### Individual Packages

- **AXIS**: 8, Training Time < 1 week: 3, 1 week <= Training Time < 2 weeks: 1, 2 weeks <= Training Time < 1 month: 2, Training Time >= 1 month: 2
- **BondEdge**: 5, Training Time < 1 week: 1, 1 week <= Training Time < 2 weeks: 2, 2 weeks <= Training Time < 1 month: 1, Training Time >= 1 month: 1
- **MG ALFA**: 19, Training Time < 1 week: 2, 1 week <= Training Time < 2 weeks: 4, 2 weeks <= Training Time < 1 month: 4, Training Time >= 1 month: 10
- **MoSes**: 7, Training Time < 1 week: 1, 1 week <= Training Time < 2 weeks: 2, 2 weeks <= Training Time < 1 month: 2, Training Time >= 1 month: 2
- **PTS**: 22, Training Time < 1 week: 4, 1 week <= Training Time < 2 weeks: 6, 2 weeks <= Training Time < 1 month: 4, Training Time >= 1 month: 8
- **TAS**: 58, Training Time < 1 week: 9, 1 week <= Training Time < 2 weeks: 10, 2 weeks <= Training Time < 1 month: 12, Training Time >= 1 month: 21
- **In house**: 6, Training Time < 1 week: 2, 1 week <= Training Time < 2 weeks: 2, 2 weeks <= Training Time < 1 month: 0, Training Time >= 1 month: 2
- **Other**: 14, Training Time < 1 week: 4, 1 week <= Training Time < 2 weeks: 4, 2 weeks <= Training Time < 1 month: 0, Training Time >= 1 month: 0
18. Similarly, how much training is required on a typical update/new release before becoming knowledgeable enough to use it for cash flow testing purposes?

<table>
<thead>
<tr>
<th>Package</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package one</td>
<td></td>
</tr>
<tr>
<td>Less than ½ week</td>
<td></td>
</tr>
<tr>
<td>Greater than or equal to 1/2 week but less than 1 week</td>
<td></td>
</tr>
<tr>
<td>Greater than or equal to 1 week but less than 2 weeks</td>
<td></td>
</tr>
<tr>
<td>Greater than 2 weeks</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td></td>
</tr>
<tr>
<td>Package two</td>
<td></td>
</tr>
<tr>
<td>All Packages Combined</td>
<td></td>
</tr>
<tr>
<td>Training Time &lt; 1/2 week (57)</td>
<td>46.0 %</td>
</tr>
<tr>
<td>1/2 week &lt;= Training Time &lt; 1 week (24)</td>
<td>19.4 %</td>
</tr>
<tr>
<td>1 week &lt;= Training Time &lt; 2 weeks (9)</td>
<td>7.3 %</td>
</tr>
<tr>
<td>Training Time &gt;= 2 weeks (9)</td>
<td>7.3 %</td>
</tr>
<tr>
<td>Don’t know (25)</td>
<td>20.2 %</td>
</tr>
</tbody>
</table>
Individual Packages

- AXIS (8) - Training Time < 1/2 week: 6
- BondEdge (5) - Training Time < 1/2 week: 3
- MG ALFA (19) - Training Time < 1/2 week: 10
- MoSes (7) - Training Time < 1/2 week: 1
- PTS (22) - Training Time < 1/2 week: 6
- TAS (58) - Training Time < 1/2 week: 10
- In house (6) - Training Time < 1/2 week: 3
- Other (14) - Training Time < 1/2 week: 4

Legend:
- Training Time < 1/2 week
- 1/2 week <= Training Time < 1 week
- 1 week <= Training Time < 2 weeks
- Training Time >= 2 weeks
SECTION 4. SOFTWARE AND VENDOR SATISFACTION RATES

19. Please rate the performance of the individual packages for the following questions using
   1: very dissatisfied ----- 5: very satisfied, NA: Not Applicable

   1  2  3  4  5  NA

   User friendliness
   Ease of customizing
   Reporting and data mining
   General product modeling
   General asset modeling
   Ability to integrate with pricing
   Keeping up with regulatory change
   Ability to integrate with other software
   Processing speed
   Reliability
   Ease of repairing the system
   Data verification
   Security features
   Support startup
   Written materials
   Overall satisfaction
### Processing speed

- **AXIS**: 4.1
- **BondEdge**: 4.3
- **MG ALFA**: 3.7
- **MoSes**: 3.0
- **PTS**: 2.5
- **TAS**: 3.5
- **In house**: 3.8
- **Other**: 4.1

### Reliability

- **AXIS**: 4.0
- **BondEdge**: 4.2
- **MG ALFA**: 4.1
- **MoSes**: 3.7
- **PTS**: 3.4
- **TAS**: 3.8
- **In house**: 4.0
- **Other**: 3.9
### Written materials

<table>
<thead>
<tr>
<th>Service</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXIS</td>
<td>3.6</td>
</tr>
<tr>
<td>BondEdge</td>
<td>3.4</td>
</tr>
<tr>
<td>MG ALFA</td>
<td>3.5</td>
</tr>
<tr>
<td>MoSes</td>
<td>4.3</td>
</tr>
<tr>
<td>PTS</td>
<td>2.3</td>
</tr>
<tr>
<td>TAS</td>
<td>3.2</td>
</tr>
<tr>
<td>In house</td>
<td>2.7</td>
</tr>
<tr>
<td>Other</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### Overall satisfaction

<table>
<thead>
<tr>
<th>Service</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>AXIS</td>
<td>4.4</td>
</tr>
<tr>
<td>BondEdge</td>
<td>4.0</td>
</tr>
<tr>
<td>MG ALFA</td>
<td>3.9</td>
</tr>
<tr>
<td>MoSes</td>
<td>4.0</td>
</tr>
<tr>
<td>PTS</td>
<td>2.8</td>
</tr>
<tr>
<td>TAS</td>
<td>3.6</td>
</tr>
<tr>
<td>In house</td>
<td>4.2</td>
</tr>
<tr>
<td>Other</td>
<td>3.8</td>
</tr>
</tbody>
</table>
20. Are you satisfied with the vendor’s plans for the future? (Single)
   Package one   Package two

   Yes
   Unknown
   No. Please explain

---

**All Packages Combined**

- Yes (60): 51.7%
- Unknown (48): 41.4%
- No (8): 6.9%

**Individual Packages**

- AXIS (8): 6 Yes, 2 Unknown, 0 No
- BondEdge (5): 2 Yes, 3 Unknown, 0 No
- MG ALFA (19): 10 Yes, 6 Unknown, 0 No
- MoSes (7): 2 Yes, 2 Unknown, 0 No
- PTS (22): 12 Yes, 4 Unknown, 0 No
- TAS (58): 30 Yes, 18 Unknown, 0 No
- In house (6): 5 Yes, 0 Unknown, 0 No
- Other (14): 7 Yes, 5 Unknown, 0 No

---

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21. Please select up to three of the following improvements that you would most like to see in the Cash Flow Testing software package(s) currently being used.

Customer service
Price
Processing speed
Coverage of assets
Coverage of liabilities
Up-to-date with regulation changes
Features, functionality, and flexibility
Other, please specify

Note: The percentages are based on the total respondents (139), and respondents can choose up to 3 improvements.
22. Are you considering changing vendor(s) within 1 year? (Single answers)
   Package one  Package two
   Don’t know (go to 24)
   No (go to 24)
   Yes, please comment (go to 23)
   What advantages would you hope to achieve by switching software?

23. What product(s) would you consider purchasing? (Multiple answers; go to 24)

   AXIS – GGY Inc.
   Classic Solutions Risk Management – MoSes
   Deloitte Touche – Prophet
   Lewis & Ellis – LEAPP$®
   Milliman MG ALFA
   SS&C Technologies – PTS
   Tillinghast-Towers Perrin – TAS®
   Tillinghast-Towers Perrin – Global CAP:Link™
   Winkelvoss Technologies – ProVal
   Other, please specify
24. Are there other important issues regarding Cash Flow Testing software on which you would like to comment?

The following are summarized general comments from the respondents.

- Respondents would like to have one system or integrated package for regular valuation, financial reporting, pricing, ALM, forecasting, experience analysis, earnings analysis, etc.
- Respondents have concerns about the ability of the current software packages to adequately handle equity-indexed annuities.