

# FinaMetrica Risk Profiling Engine User Manual

## Version 2.6 February 2015

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## Part I: Introduction

The FinaMetrica Risk Profiling Engine is a web service\* for third-party software (calling software) to interact with FinaMetrica's Risk Profiling Test.

There are 7 components in FinaMetrica's Risk Profiling Engine:

- a. Risk Questions
- b. Demographic Questions
- c. Risk Tolerance Score
- d. Risk Tolerance Report
- e. Risk Questions Report
- f. Joint Risk Questions Report Web Service
- g. Joint Risk Profile Report Web Service

The first two components Risk Questions and Demographic Questions provide the contents of the risk tolerance and demographic questionnaires respectively. The risk tolerance and demographic questionnaire can be completed via a web interface or via a hard copy version, from which the answers are later transferred to the web interface.

The risk tolerance questionnaire has **two different versions**: depending on the version you select, there can be 12 or 25 questions. All must be answered. Answers to the risk tolerance questionnaire will need to be saved or recorded by the calling software in order to be made available to the Risk Tolerance Score and Risk Tolerance Report components. The calling software will also need to save or record the date and time in GMT that the questionnaire was completed in order to be made available to the Risk Tolerance Score component.

There are 8 demographic questions. Answers to the demographic questionnaire are **OPTIONAL** and do not contribute to the scoring process but they are used in research studies by FinaMetrica to aid in increasing the understanding of risk tolerance and maintaining the integrity of the testing instrument. If the calling software intends to send the answers to the demographic questions, it should be sent to the Risk Tolerance Score component to enable the statistical record to be written.

The Risk Tolerance Score component calculates the risk tolerance score from the answers to the risk tolerance questionnaire. Once a risk tolerance score is calculated it will need to be saved or recorded by the calling software in order to generate the Risk Tolerance Report. This component also writes a statistical record to a history file. The statistical record comprises the Licence code, Sub-Licence code, Adviser code, Client code, Country code, version number, risk and demographic answers, questionnaire date and the risk tolerance score.

The Engine produces two main reports: the Risk Tolerance Report and the Risk Questions Report.

The Risk Tolerance Report comprises an individually specific section, which summarises and assesses the answers given in the risk tolerance questionnaire, and a general section, which provides information about risk tolerance and the FinaMetrica test. It is generated from the answers to the risk tolerance questionnaire and the risk tolerance score. The system automatically checks that the score is consistent with the answers provided before generating the report.

The Risk Questions Report shows the risk tolerance questionnaire with marked answers for review purposes. It is generated from the answers to the risk tolerance questionnaire.

The Engine also allows you to join two separate Risk Tolerance Reports and Risk Questions Reports, through the use of the Joint Risk Questions Report Web Service and the Joint Risk Profile Report Web Service.

**\*Web services** are web-based applications that dynamically interact with other Web applications to seamlessly exchange data . Web services enable software components to interact with each other around the world. Web services use XML-based protocols that are lightweight and simpler. Such applications typically run behind the scenes, one program "talking to" another (server to server). Microsoft's .NET and Sun's Sun ONE (J2EE) are the major development platforms that natively support these standards.

## Part II: How To Use The Risk Profiling Engine

The assumption is that you have a website with subscriber base functionality (enable restricted access) but there are many ways you could integrate the RP Engine into your own software. You could use the RP Engine with a desktop program providing that you have access to the web for an online integration. This manual assumes you will be using the Engine for your website.

The RP Engine is a stand-alone processor. A typical overall process can be summarised, for a hypothetical licensee, XYZ Investments, as follows:

- User gains access to your website using a login and password. Then navigates to where the Risk Tolerance icon becomes visible (see Figure 1.)
- User clicks on the Risk Tolerance icon on your website's GUI. This is assuming your user has a proper licence to do the risk tolerance test using the RP Engine.
- Your website calls the RP Engine - **Risk Questions Web Service** - to obtain the Risk questions and possible answers (XML format.)
- Your website renders (displays) within your GUI the questions and possible answers (see Figure 2.)
- User answers the questionnaire or transfers the answers from a completed hard copy version. Your website saves the answers and the date the questionnaire was completed.
- Your website calls the RP Engine - **Demographic Questions Web Service** - to obtain the Demographic questions and possible answers.
- Your website renders (displays) within your GUI the questions and possible answers (see Figure 3.)
- User answers the questionnaire or transfers the answers from a completed hard copy version. Your website saves the answers.
- Your website calls the RP Engine - **Risk Tolerance Score Web Service** - passing the answers to the Risk Questions and any answers to the Demographic questions and obtaining the score.
- Your website saves the Risk Tolerance Score.
- Your website calls the RP Engine - **Risk Profile Report Web Service** - passing the answers to the Risk Questions and the Risk Tolerance Score, and obtaining the Risk Tolerance Report (see Figure 4.)
- Your website calls the RP Engine - **Risk Questions Report Web Service** - passing the Risk answers and obtaining a report showing the answers to the Risk questionnaire (see Figure 5.)
- Your website will be responsible for storing the answers, score, etc linked to a specific client in your own database.
- If your website has the capacity to handle couples jointly, you can use the **Joint Risk Questions Report Web Service** and the **Joint Risk Profile Report Web Service** to retrieve both partners' completed risk questionnaires and risk tolerance report in as a single output, respectively.

A graphical user interface has been created in a demonstration environment to show users the available operations of the Risk Profiling Engine and calling software. It can be accessed from:

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

To see WSDL file simply click on Service Description at the top of page.



Figure 1

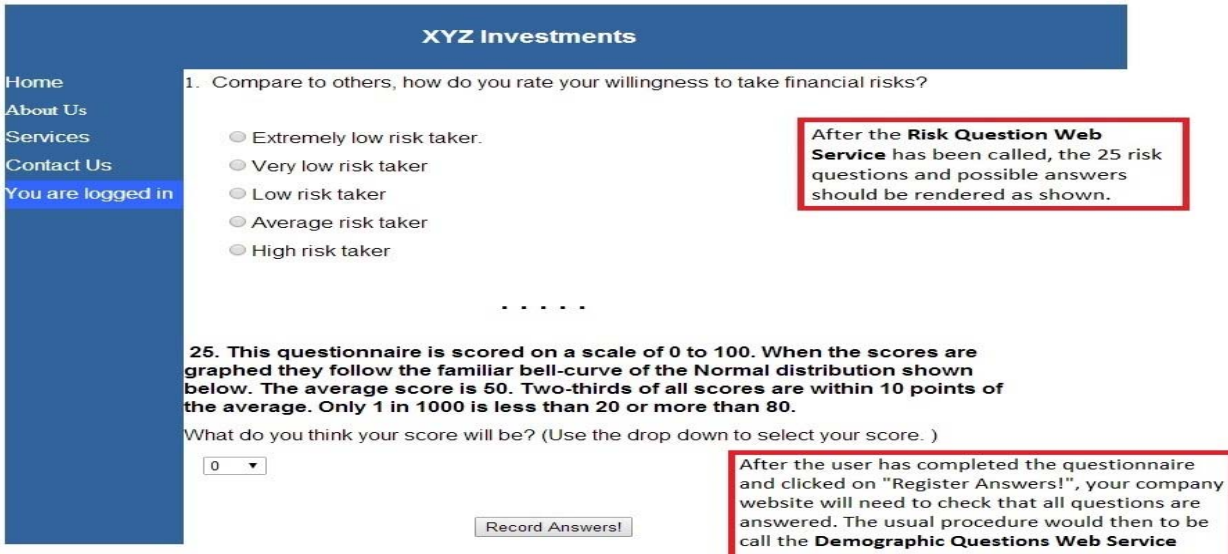


Figure 2

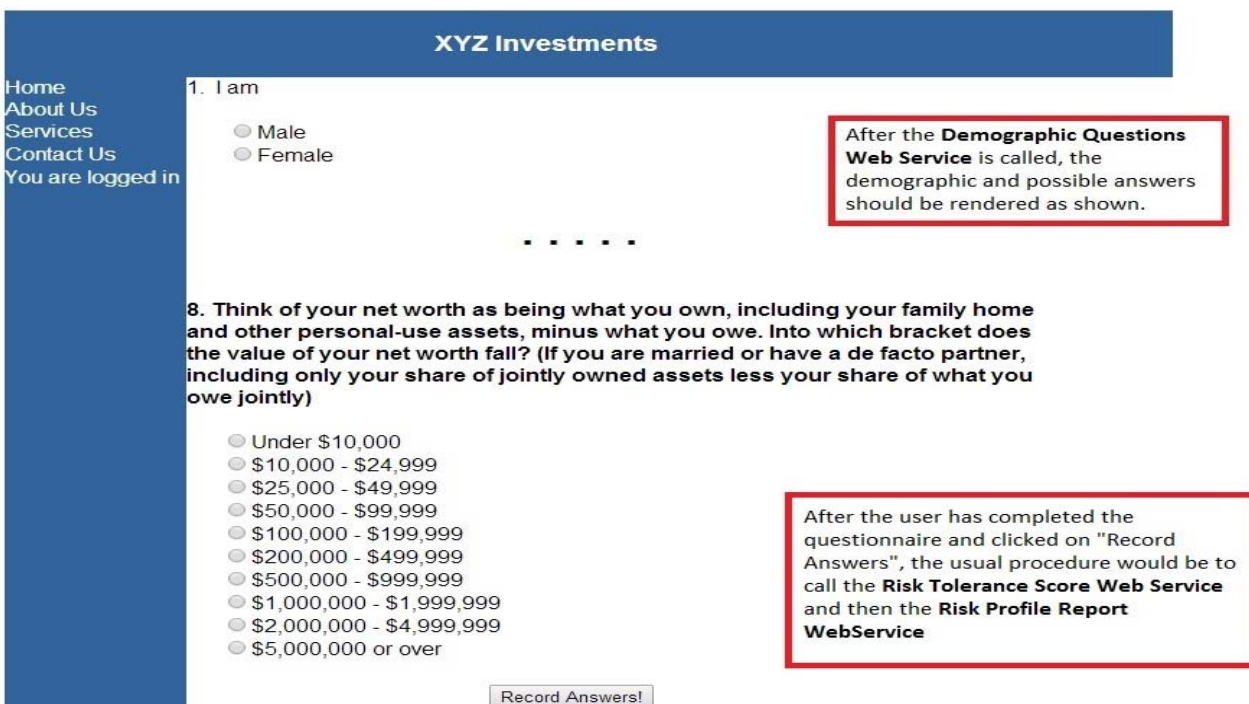


Figure 3

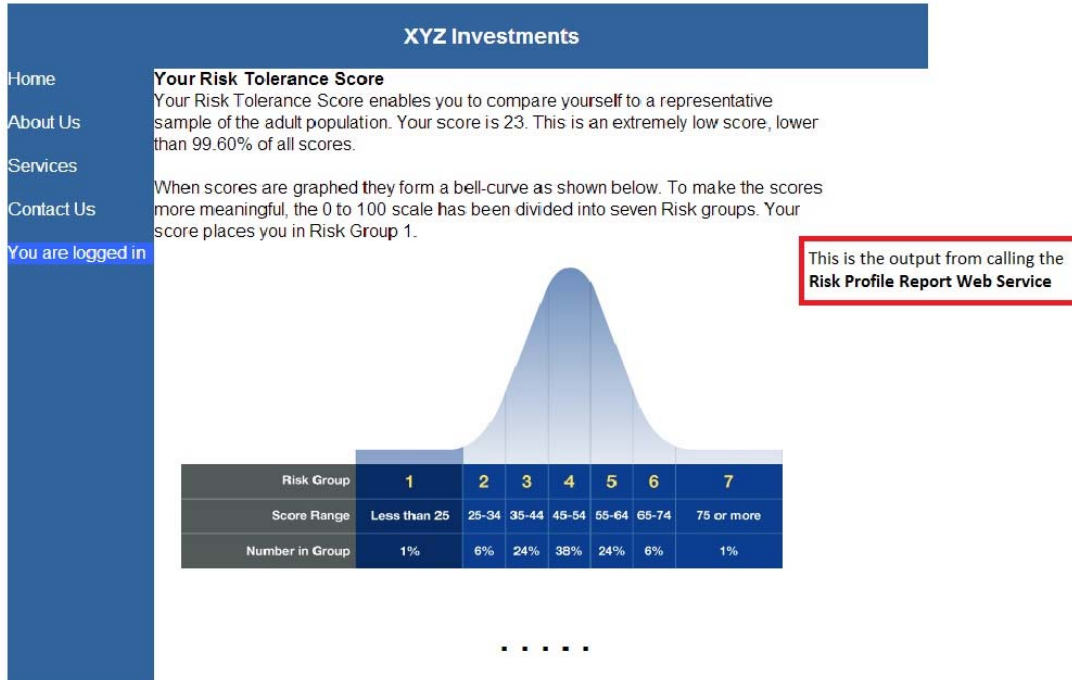


Figure 4

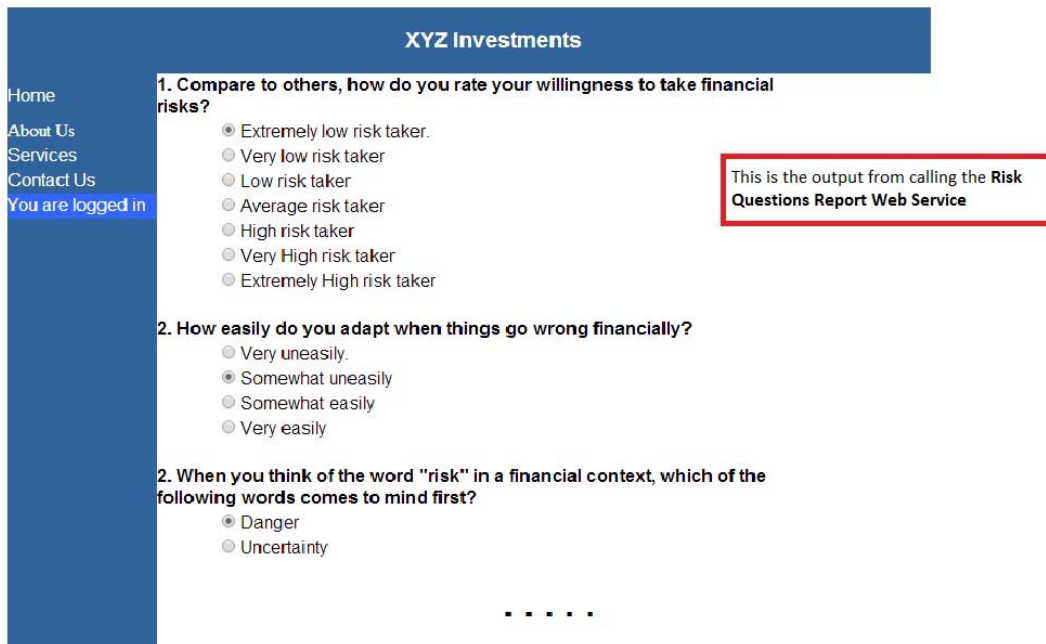


Figure 5

## Part III: Web Services

All the web services at [www.rpengine.com](http://www.rpengine.com) require the following parameters:

- Licence code, Sub-licence code, Adviser code and Client code (each of which can be up to 38 alphanumeric and special characters long),
- the country code (AUS, US, UK, CAE - Canada English, CAF - Canada French, CN - Chinese, MAE - Malaysia English, IND - India English, FIN - Finland Finnish, SWE - Finland Swedish, GER - Germany German, ZAA - South Africa Afrikaans, ZAE- South Africa English) and
- Version IDs can be found in Appendix A: please use the latest version available to your country.

Some of the web services require other specific parameters which will be covered in their respective sections below.

In general, the Licence, Sub-Licence and Adviser codes are used to control access to the Engine. Unless they are each valid and active, access will be denied. The precise details of access control will vary depending on the terms of the licence agreement.

The use of the Client code is also determined by the licence agreement. Where the calling software re-calculates the risk tolerance score each time it is displayed, the licence agreement will require that each client has a unique Client code. In this way it will be possible for FinaMetrica to identify re-calculation in the history file. In other circumstances, a unique client code may also be required.

### a: Risk Questions Web Service

The Risk Questions section shows a working example of the risk tolerance questionnaire including introduction, 12 or 25 questions (depending on the version) and answer options for those questions.

Enter the required parameters as shown in Fig 6 then click 'Invoke' to display the risk tolerance questionnaire in XML format (Fig 7.)

### Risk Questions

List of Questions to be answered

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	<input type="text" value="TestingLicence"/>
SubLicenceCode_VarChar_30:	<input type="text" value="TestingSublicence"/>
AdviserCode_VarChar_30:	<input type="text" value="TestingAdviser"/>
ClientCode_VarChar_30:	<input type="text" value="12345"/>
Country_Char_3:	<input type="text" value="UK"/>
Version_VarChar_20:	<input type="text" value="v2.0"/>

Figure 6 : Risk Questions Web Service Input

```

<?xml version="1.0" encoding="utf-8" ?>
- <QuestionData>
- <QuestionHeader>
  <QuestionMappingId>1</QuestionMappingId>
  <QuestionHeaderFooterDescription><b>Why are 25 questions needed?</b> A person's a
  particular experience they have had, or their mood at the time. Or they may have n
  made a mistake.</QuestionHeaderFooterDescription>
  <SortOrder>1</SortOrder>
</QuestionHeader>

```

Figure 7 : Risk Questions XML Output

To view a sample of the risk tolerance questionnaire in html format click on the link below.  
<http://riskprofiling.com/resources/samples/25Qsample>

## b: Demographic Questions Web Service

The Demographic Questions section shows a working example of the optional demographic questionnaire including introduction, 8 questions and answer options.

Enter the required parameters as shown in Fig 8 then click 'Invoke' to display the demographic questionnaire in XML format (Fig 9.)

### Demographic Questions

List of demographic questions to be answered

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	<input type="text" value="TestingLicence"/>
SubLicenceCode_VarChar_30:	<input type="text" value="TestingSublicence"/>
AdviserCode_VarChar_30:	<input type="text" value="TestingAdviser"/>
ClientCode_VarChar_30:	<input type="text" value="123"/>
Country_Char_3:	<input type="text" value="UK"/>
Version_VarChar_20:	<input type="text" value="v2.0"/>

Figure 8 : Demographic Questions Web Service Input

```

<?xml version="1.0" encoding="utf-8" ?>
- <DemographicData>
- <QuestionHeader>
  <QuestionMappingId>1</QuestionMappingId>
  <QuestionHeaderFooterDescription>Finally, a few questions about yourself to help us understand our
  community.</QuestionHeaderFooterDescription>
  <SortOrder>1</SortOrder>
</QuestionHeader>
- <Question QuestionId="26">
  <Version>v1.0</Version>

```

Figure 9 : Demographic Questions XML Output

To view a sample of the demographic questionnaire in html format go to the URL listed below  
<http://riskprofiling.com/resources/samples/25Qsample>

### c: Risk Tolerance Score Web Service

The Risk Tolerance Score section enables you to score the answers to the risk tolerance questionnaire.

Enter the required parameters as shown in Fig 10 then click 'Invoke' to display the risk tolerance score in XML format (Fig 14.)

In addition to the standard parameters, the Risk Tolerance Score Web Service also requires:

- the risk and demographic answers (see **Note A** below), and
- the questionnaire date (enter the date in **GMT** that the Risk Tolerance questionnaire was completed in the form dd-mmm-yyyy.)

### Risk Tolerance Score

Score based upon the answered questions

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	<input type="text" value="TestingLicence"/>
SubLicenceCode_VarChar_30:	<input type="text" value="TestingSublicence"/>
AdviserCode_VarChar_30:	<input type="text" value="TestingAdviser"/>
ClientCode_VarChar_30:	<input type="text" value="12345"/>
Country_Char_3:	<input type="text" value="UK"/>
Version_VarChar_20:	<input type="text" value="v2.0"/>
QuestionAnswers_CommaDelimitedString:	<input type="text" value="12641-1158, 12648-1159, 12651-1160, 12654-1161, 12"/>
DemographicAnswers_CommaDelimitedString:	<input type="text" value="221-26, 224-27, 325-28, 332-29, 333-30, 338-31, 343-"/>
QuestionnaireDate_dd_mmm_yyyy:	<input style="border: 2px solid orange;" type="text" value="15-Nov-2012"/>

Figure 10 : Risk Tolerance Score Web Service Input

```

<?xml version="1.0" encoding="utf-8" ?>
- <RiskProfileScore xmlns="http://www.FinaMetrica.com">
  <Score>14</Score>
</RiskProfileScore>

```

Figure 11 : Risk Tolerance Score XML Output  
(The Risk Tolerance Score Web Service also writes a statistical record to a history file.)

#### d: Risk Profile Report Web Service

The Risk Profile Report section at [www.rpengine.com](http://www.rpengine.com) shows a working example of the Risk Tolerance Report.

For the 12 question test, the report contains two variable sections, an Inconsistency Alert and an Adjusted Risk Tolerance Score and Group. Depending on the answer combination, the report may contain none or one of the variables, the two variables cannot be triggered in the same report.

For the 25 question test, the report contains one variable section, the footnote, which can be displayed at the calling software's discretion via the IncludeFootnote\_Boolean field.

Enter the required parameters as shown in Fig 12 then click 'Invoke' to display the Risk Tolerance Report in XML format (Fig 13.) In addition to the standard parameters, the Risk Profile Report Web Service also requires:

- the risk answers (see **Note A** above, the system will check to make sure that this is matched to the risk questions' answers entered), and
- the footnote clause (enter "TRUE" to include the footnote in the report for 25 question test only, if not enter "FALSE".)

**Risk Profile Report**

Report based upon the answered questions

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	TestingLicence
SubLicenceCode_VarChar_30:	TestingSublicence
AdviserCode_VarChar_30:	TestingAdviser
ClientCode_VarChar_30:	12345
Country_Char_3:	AUS
Version_VarChar_20:	v2.0
QuestionAnswers_CommaDelimitedString:	12641-1158, 12648-1159, 12651-1160, 12654-1161, 12
RiskToleranceScore_int:	25
IncludeFootNote_Boolean:	TRUE

Figure 12 : Risk Profile Web Service Input

```

<?xml version="1.0" encoding="utf-8" ?>
- <RiskProfileReport ReportDate="30 Jun 2005">
- <GroupDescription GroupDescriptionTypeId="0">
  <Header>Your Risk Tolerance Score</Header>
  - <Paragraph>
    <GroupText>Your Risk Tolerance Score enables you to compare yourself to a represe
      14. This is an extremely low score, lower than 99.98% of all scores.</GroupText>
    <SortOrder>1</SortOrder>
    <QuestionParagraphType>Text</QuestionParagraphType>
  </Paragraph>
  - <Paragraph>

```

Figure 13 : Risk Tolerance Report XML Output

To view a sample of the 25 Question Risk Tolerance Report in html format go to the URL listed below

<http://riskprofiling.com/resources/samples/25Qsample>

Sample 12 Question Risk Tolerance Reports can be found in Appendices B and C.

### e: Risk Questions Report Web Service

The Risk Questions Report section shows a working example of a completed risk tolerance questionnaire including introduction, questions and selected answer options.

Enter the required parameters as shown in Fig 14 then click 'Invoke' to display the Risk Questions Report in XML format.

In addition to the standard parameters, the Risk Questions Report Web Service also requires the risk answers (see **Note A** on page 11.)

To view a sample of the Risk Tolerance Report visit: [www.riskprofiling.com/resources/samples/25Qsample](http://www.riskprofiling.com/resources/samples/25Qsample)

Figure 14: Risk Question Report

### Risk Questions Report

Report outlining questions answered for Risk Tolerance Score

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	<input type="text" value="TestingLicence"/>
SubLicenceCode_VarChar_30:	<input type="text" value="TestingSublicence"/>
AdviserCode_VarChar_30:	<input type="text" value="TestingAdviser1"/>
ClientCode_VarChar_30:	<input type="text" value="12345"/>
Country_Char_3:	<input type="text" value="AUS"/>
Version_VarChar_20:	<input type="text" value="v2.0"/>
QuestionAnswers_CommaDelimitedString:	<input type="text" value="12641-1158, 12648-1159, 12651-1160, 12654-1161, 12"/>

## f: Joint Risk Questions Report Web Service

The Joint Risk Questions Report works similar to the standard risk questions report and is designed to display two separate (and completed) questionnaires in the one output. i.e. allows for couples to have a one joint questionnaire report with both partners' answers. It has the same fields as the risk questionnaire report service but requests two answer options strings, one for each person. Each person must have their own question answer string and both people must be using the same version (see figure 15).

### Joint Risk Questions Report

Report outlining questions answered for Risk Tolerance Score

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	<input type="text" value="TestingLicence"/>
SubLicenceCode_VarChar_30:	<input type="text" value="TestingSublicence"/>
AdviserCode_VarChar_30:	<input type="text" value="TestingAdviser1"/>
ClientCode_Client1_VarChar_30:	<input type="text" value="1232"/>
ClientCode_Client2_VarChar_30:	<input type="text" value="1233"/>
Country_Char_3:	<input type="text" value="AUS"/>
Version_VarChar_20:	<input type="text" value="v2.0"/>
QuestionAnswers_Client1_CommaDelimitedString:	<input type="text" value="17406-1788, 17411-1789, 17415-1790, 17417-1791, 17"/>
QuestionAnswers_Client2_CommaDelimitedString:	<input type="text" value="17406-1788, 17411-1789, 17415-1790, 17417-1791, 17"/>

Figure 15: Joint Risk Questions Report

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<Question QuestionId="927">
  <Version>v2.0</Version>
  <CountryId>UK</CountryId>
  <QuestionType>Option</QuestionType>
  <SortOrder>1</SortOrder>
  <QuestionParagraph QuestionParagraphId="1345">
    <ParagraphText>
      Compared to others, how do you rate your willingness to take financial risks
    </ParagraphText>
    <QuestionParagraphType>Text</QuestionParagraphType>
    <SortOrder>1</SortOrder>
    <LineBreak>false</LineBreak>
  </QuestionParagraph>
  <QuestionOption QuestionOptionId="10109">
    <OptionText>Extremely low risk taker.</OptionText>
    <SortOrder>1</SortOrder>
  </QuestionOption>
  <QuestionOption QuestionOptionId="10110">
    <OptionText>Very low risk taker.</OptionText>
    <SortOrder>2</SortOrder>
  </QuestionOption>
</Question>
```

Figure 16: Joint Risk Questions Report XML Output

## g: Joint Risk Profile Report Web Service

The Joint Risk Profile Report is similar to the standard risk profile report but combines two separate risk answer strings and scores to publish one joint risk profile report; allowing a side by side comparison of a couple's risk tolerance report. For the joint report you will need to provide the Engine with two separate risk answer strings and the corresponding risk tolerance score for each string. Note that both must be the same version.

### Joint Risk Profile Report

Joint Report based upon the answered questions

**Test**

To test the operation using the HTTP POST protocol, click the 'Invoke' button.

Parameter	Value
LicenceCode_VarChar_30:	<input type="text" value="TestingLicence"/>
SubLicenceCode_VarChar_30:	<input type="text" value="TestingSublicence"/>
AdviserCode_VarChar_30:	<input type="text" value="TestingAdviser1"/>
ClientCode_Client1_VarChar_30:	<input type="text" value="1232"/>
ClientCode_Client2_VarChar_30:	<input type="text" value="1233"/>
Country_Char_3:	<input type="text" value="AUS"/>
Version_VarChar_20:	<input type="text" value="v2.0"/>
QuestionAnswers_Client1_CommaDelimitedString:	<input type="text" value="17406-1788, 17411-1789, 17415-1790, 17417-1791, 17"/>
RiskToleranceScore_Client1_int:	<input type="text" value="58"/>
QuestionAnswers_Client2_CommaDelimitedString:	<input type="text" value="17406-1788, 17411-1789, 17415-1790, 17417-1791, 17"/>
RiskToleranceScore_Client2_int:	<input type="text" value="64"/>
IncludeFootNote_Boolean:	<input type="text" value="yes"/>

Figure 17: Joint Risk Profile Report

```

<RiskProfileReport>
  <GroupDescription ClientNo="1" GroupDescriptionTypeId="0">
    <Header>Your Risk Tolerance Score</Header>
    <Paragraph>
      <GroupText>
        Your Risk Tolerance Score enables you to compare yourself to a representative
        lower-than-average score, lower than 77% of all scores.
      </GroupText>
      <SortOrder>1</SortOrder>
      <QuestionParagraphType>Text</QuestionParagraphType>
    </Paragraph>
    <Paragraph>
      <GroupText>
        When scores are graphed they form a bell-curve as shown below. To make the score
        seven Risk Groups. Your score places you in Risk Group 3.
      </GroupText>
      <SortOrder>2</SortOrder>
      <QuestionParagraphType>Text</QuestionParagraphType>
    </Paragraph>
  </GroupDescription>

```

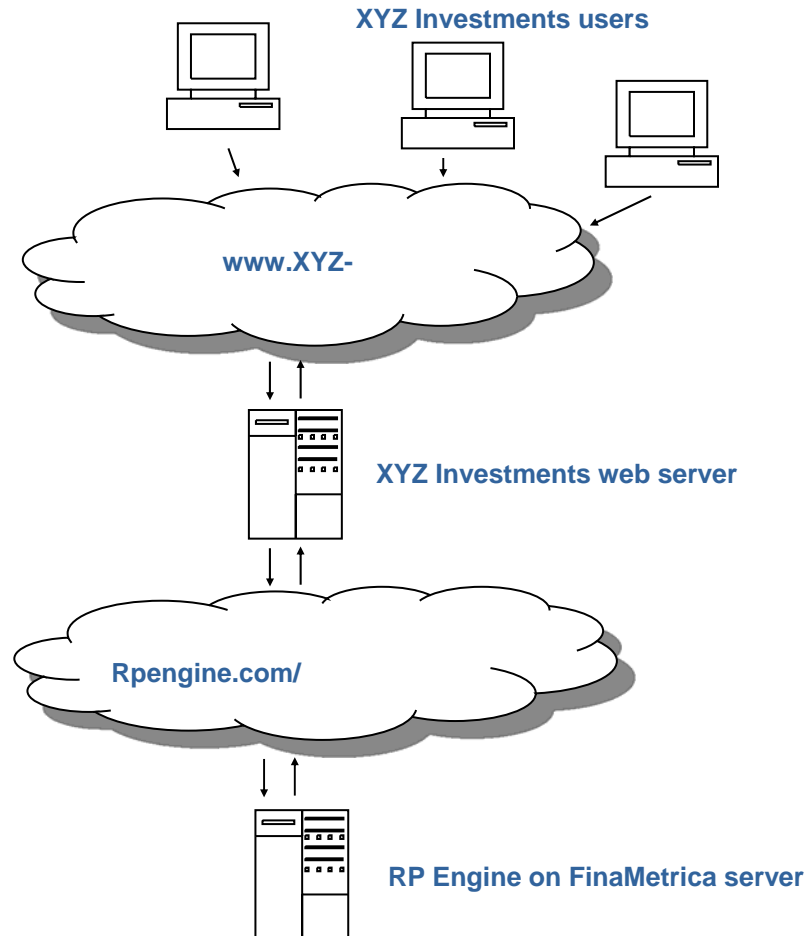
Figure 18: Joint Risk Profile Report XML Output

## Part IV: Access Requirements

The website application for use of the RP Engine needs to be written with software that can use web services technologies.

We also assume that the calling software has the capability to render the Risk and Demographic questionnaires, store the answers, date completed and score in its own database at the client level (client record), and the logic to validate that the questionnaires are properly answered.

The diagram below shows how the RP Engine works for a hypothetical licensee, XYZ Investments.



### Technologies requirements

The RP Engine requires the following software:

- Internet Browser
- Method of calling the web service and rendering the XML.
- Web Server

---

## Part VI: Technical Specifications

The RP Engine was developed using Microsoft .Net Framework v4.0 and Microsoft SQL technologies.

The RP Engine uses the following software and hardware:

- MS Internet Explorer (client)
- MS 2008 R2 server
- MS Net framework 4.0
- MS SQL 2008 R2 licence
- MS IIS 7
- Security Certificate (optional and recommended)
- TCP/IP connection
- Professional hosting facility

## Part VII: Service Duplication

We have duplicated the RPE onto a separate server as a fallback should any problems connecting to [www.rpengine.com](http://www.rpengine.com) arise. Such problems may be due to causes ranging from planned server maintenance to unforeseen system failures.

This secondary service can be accessed through [www.rpengine2.com](http://www.rpengine2.com). The secondary service is hosted in another physical location.

Access to [www.rpengine2.com](http://www.rpengine2.com) will be exactly the same as [www.rpengine.com](http://www.rpengine.com) – only the URL has changed. This means that you can use the existing licence(s) that you have been allocated.

We recommend that first you run some tests to ensure that you can successfully connect to [www.rpengine2.com](http://www.rpengine2.com) prior to making it your backup service for the RPE.

Please note that [www.rpengine2.com](http://www.rpengine2.com) should be used only for backup purposes and you should revert back to the primary RPE ([www.rpengine.com](http://www.rpengine.com)) after the issue has been resolved. Developers should look to make automatic switch to secondary service if primary service does not respond to enhance the user experience.

## Part VIII: Data Storage and Privacy

The Engine will record a log entry when it is asked to calculate a score i.e. when the Risk Tolerance Score Web Service is used.

Each log entry contains licence code, adviser code, client code, the answers to the risk questionnaire and any demographic answers which have been sent, as well as other system values such as date.

The log files are stored at [www.rpengine.com](http://www.rpengine.com) (hosted in Melbourne, Australia) or at [www.rpengine2.com](http://www.rpengine2.com) (Sydney, Australia). Periodically, we will extract these log files onto the FinaMetrica Office server where we perform statistical analysis. The log files are then deleted off the respective servers.

Note the Engine does not store any client information. The client code can be any value that the licensee wishes to send - we only ask that it be unique to each client so we can distinguish one profile from another when comparing data during statistical analysis.

## Part IX: Additional Calling Software Requirements

The FinaMetrica system has three components: a risk tolerance test, a methodology for comparing risk tolerance to portfolio risk and educational materials for explaining portfolio risk.

Proper use of the risk tolerance test requires that it be an input to discussion between adviser and client, see QuickStart Guide, one possible outcome of which is adviser and client agree to work with an adjusted risk tolerance score rather than the calculated score. The calling software must make provision for this additional requirement.

The comparison methodology and the educational materials add value but are not essential requirements of the system.

In addition to any modifications required to implement the Risk Profiling Engine, the following additional requirements should be considered.

### a. Terms and Conditions (Mandatory)

It is a condition that prior to accessing the RP Engine, both advisor and client must first accept the terms and conditions of use as specified in the agreement. The licensee must keep a log file of the advisors' and clients' acceptance of these Terms and Conditions. Although we do not require this, it must be presentable upon request.

### b. Agreed Score (Mandatory)

#### i. The 25 Questions Test

The FinaMetrica risk profiling system is based on a psychometric test of personal financial risk tolerance. It is a principle of a psychometric testing that the test results are discussed with the client before arriving at a final assessment. The risk tolerance score represents an overall evaluation of the answers the respondent gave to the questionnaire. These answers will not necessarily be consistent. An inconsistent answer will be identified as a "difference" in the report.

After discussion with the client, the adviser and client may agreed to adjust the score appropriately. Your system will need to make provision to document this discussion and decision with a file note, and include reference to it in the client's financial plan and/or investment policy statement. The agreed score is then considered the client's final risk tolerance assessment and should be used for any further modelling.

#### ii. The 12 Questions Test

Where an adviser would normally be required to discuss and resolve inconsistencies in the client's answers, the 12 question test uses an adjustment algorithm to adjust the Risk Score and Risk Group where necessary.

Some sets of answers are so inconsistent as to make algorithmic adjustment too difficult/dangerous. To deal with this there is a consistency algorithm which is applied before the adjustment algorithm. If the answers are too inconsistent an Inconsistency Alert is included in the report. If they are not too inconsistent the adjustment algorithm is used to determine whether there should be an Adjusted Risk Score and Adjusted Risk Group in the report.

The Adjusted Risk Score [AdjustedRiskGroup] and Adjusted Risk Group [AdjustedRiskScore] are identifiable variables in the report output so you can pick them up automatically.

### c. Questionnaire Date (Mandatory)

Where the risk questionnaire is completed by the client online, the Questionnaire Date will be that date. However, where the answers are being entered by an adviser or staff from a hard copy of the questionnaire, the Questionnaire Date will be the date of the client's signature on the hard copy questionnaire.

---

**d: Provisioning for Future Releases (Mandatory)**

As we strive to improve our product and service, we will continue to introduce new versions of the risk questionnaire and report.

The RP Engine is designed with different versions for different countries, Appendix A shows all the available versions for each country. When we release a new version, there will be a transitional period where we will support both the previous version and the new version at the same time. We will then phase out the old version.

We recommend that, during the design phase, you develop a capacity to handle future releases easily and with minimal coding changes.

As per agreement, we require that you must update to the latest version within a reasonable time frame. We will notify RP Engine users well in advance of any new version releases and usually offer users up to 6 months to update their software. Of course, we understand the complexities of software updates and are happy to work with you if you need additional time.

**e. Comparing Risk Tolerance With Portfolio Risk (Optional)**

FinaMetrica provides a methodology for comparing risk tolerance scores with portfolio risk as embodied in the Asset Allocation Mappings and Guide. If the calling software wants to deliver this functionality to its users, then provision will need to be made in the calling software for incorporating the linking methodology.

For example, if the calling software incorporates a standard set of asset allocations then it may wish to append FinaMetrica comfort/discomfort score ranges to each. Additionally, the calling software may wish to incorporate the functionality of the Asset Allocation Mappings' Comfort Zone Calculators.

In line with d. Provisioning for future releases, as we release new versions of the risk questionnaire and report there will also be new versions of the Asset Allocation Mappings.

**f. Risk-Tolerance-Based Modeling/Projections (Optional)**

Calling software may wish to use a risk tolerance score to select an asset allocation/portfolio to begin 'what if' modeling. Where the client is an individual, the agreed score should be used. Where the client is a couple, the calling software will need an algorithm to select the initial asset allocation/portfolio, e.g. the lower of the two scores, the average score, etc.

**g. Educational Materials (Optional)**

FinaMetrica's standard educational materials are based on the seven portfolios used in Q16 of the risk tolerance questionnaire. The materials are updated half yearly and distributed as pdfs. These are very popular with those who use them.

The materials are produced manually based on historical portfolio performance analysis done by a large Excel suite of programs. It would not be practical (at present) to try to automate the process in the calling software.

Hence, to make these materials available to calling software users, provision would need to be made to store the pdf and replace it periodically with an update.

Some large(r) clients of FinaMetrica have paid for the materials to be customised to their standard asset allocations/model portfolios.

## Appendix A: Available Versions by Country

Please always use the latest version available to your country. This section lists all of the available country codes and the corresponding version number to use.

Each country version has nuanced differences in the wording of the questions, the way the score is calculated and the content of the report. It is important that you use the country code that corresponds to your target market.

For example, if you want to be an American integrator implementing the 25-question test, use “Country=US” and “Version=v2.0”. If you want to implement the 12-question test, use “Country=UK” and “Version=s1.0”.

### 25-Question Test

Country	Code	Version
Australia/New Zealand	AUS	v2.0
Canada - English	CAE	v2.0
Canada - French	CAF	v2.0
Germany - German	GER	v2.0
India - English	IND	v2.0
Republic of Ireland	IE	v2.0
South Africa - English	ZAE	v2.0
South Africa - Afrikaans	ZAA	v2.0
United Kingdom	UK	v2.0
United States of America	US	v2.0

### 12-Question Test

Country	Code	Version
Australia/New Zealand	AUS	s1.0
Canada - English	CAE	s1.0
Canada - French	CAF	s1.0
Germany - German	GER	s1.0
India - English	IND	s1.0
Republic of Ireland	IE	s1.0
South Africa - English	ZAE	s1.0
South Africa - Afrikaans	ZAA	s1.0
United Kingdom	UK	s1.0
United States of America	US	s1.0

## Appendix B: Sample 12 Question Test Report with Adjustment

### Your Risk Tolerance Score

Your Risk Tolerance Score enables you to compare yourself to a representative sample of the adult population. Your score is 47. This is a slightly-lower-than-average score, lower than 60% of all scores.

When scores are graphed they form a bell-curve as shown below. To make the scores more meaningful, the 0 to 100 scale has been divided into five Risk Groups. Your score places you in the Average Risk Group.



### Your Risk Group

The description of the Average Risk Group which follows provides a summary of the typical attitudes, values, preferences and experiences of those in your group. It summarizes how those in your Risk Group usually answer the risk tolerance questionnaire.

Investors in the Average Risk Group are prepared to take a small to medium degree of risk with their financial decisions, more likely medium. When faced with a major financial decision some are usually more concerned about the possible losses while others are usually more concerned about the possible gains. It is somewhat to much more important that the value of their investments retains its purchasing power than that it does not fall, more likely somewhat. For most, a fall of 20% in the total value of their investments would make them feel uncomfortable but for some it would take a 33% fall. Given the portfolio choices below, they prefer Portfolio 3 or 4, more likely Portfolio 4.

#### Mix of Investment in Portfolio

Portfolio	High	Medium	Low
1	0%	0%	100%
2	0%	30%	70%
3	10%	40%	50%
4	30%	40%	30%
5	50%	40%	10%
6	70%	30%	0%
7	100%	0%	0%

### Differences Overview

It is not uncommon for some of the answers given in the risk questionnaire to differ from those typically given by people with similar risk tolerance. Sometimes the answer indicates more risk tolerance and sometimes less. The table below shows your responses to the five key investment risk questions.

Q No.		Risk Group				
		Very Low	Low	Average	High	Very High
5	Losses v Gains			✓		
6	Current Risk-Taking			✓		
9	Downside Comfort			✓		
10	Preferred Portfolio			✓		
11	Face Value vs Purchasing Power	✓				

### Adjusted Risk Score

Having regard to the one difference noted above, your Risk Score has been adjusted from 47 to 44 and your Risk Group has been adjusted from Average to Low.

## Appendix C: Sample 12 Question Test Report With Inconsistency

### Your Risk Tolerance Score

Your Risk Tolerance Score enables you to compare yourself to a representative sample of the adult population. Your score is 40. This is a very low score, lower than 83% of all scores.

When scores are graphed they form a bell-curve as shown below. To make the scores more meaningful, the 0 to 100 scale has been divided into five Risk Groups. Your score places you in the Low Risk Group.



### Your Risk Group

The description of the Low Risk Group which follows provides a summary of the typical attitudes, values, preferences and experiences of those in your group. It summarizes how those in your Risk Group usually answer the risk tolerance questionnaire.

Investors in the Low Risk Group are prepared to take a small to medium degree of risk with their financial decisions, more likely small. When faced with a major financial decision they are usually more concerned about the possible losses than the possible gains. For some, it is somewhat more important that the value of their investments does not fall than that it retains its purchasing power but for most retaining purchasing power is the more important of the two. For some, a fall of 10% in the total value of their investments would make them feel uncomfortable but for others it would take a fall of 20%. Given the portfolio choices below, they prefer Portfolio 2 or 3, more likely Portfolio 3.

Portfolio	Mix of Investment in Portfolio		
	High Risk/Return	Medium Risk/Return	Low Risk/Return
1	0%	0%	100%
2	0%	30%	70%
3	10%	40%	50%
4	30%	40%	30%
5	50%	40%	10%
6	70%	30%	0%
7	100%	0%	0%

### Inconsistency Alert

Having regard to the seven differences noted below, it is recommended that you discuss your risk tolerance report with your financial adviser.

### Differences Overview

It is not uncommon for some of the answers given in the risk questionnaire to differ from those typically given by people with similar risk tolerance. Sometimes the difference indicates more risk tolerance and sometimes less. The table below shows your differences.

Q No.		Risk Group				
		Very Low	Low	Average	High	Very High
1	Self-Rating	✓				
2	Adaptability	✓				
3	Meaning of "Risk"	✓				
4	Thrill Investing		✓			
5	Losses v Gains	✓				
6	Current Risk-Taking					✓★
7	Borrow to Invest		✓			
8	Reinvest After Bad Experience		✓			
9	Downside Comfort			✓		
10	Preferred Portfolio			✓		
11	Face Value vs Purchasing Power		✓			
12	Expected 10-year Returns		✓			

★ Your answer was actually riskier than the most risky typically given by those in the Very High Risk Group.