



SCENE

Apps

Registration Report 1.1 -
User Manual
November 2012

©FARO Technologies Inc., 2012. All rights reserved.

For personal use, this publication may be reproduced or transmitted. For commercial use, no part of this publication may be reproduced, or transmitted in any form or by any means without written permission of FARO Technologies Inc.

FARO TECHNOLOGIES, INC. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THE FAROARM, FARO LASER TRACKER, FARO LASER SCANNER AND ANY MATERIALS, AND MAKES SUCH MATERIALS AVAILABLE SOLELY ON AN "AS-IS" BASIS.

IN NO EVENT SHALL FARO TECHNOLOGIES INC. BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF THE PURCHASE OR USE OF THE FAROARM, FARO LASER TRACKER, FARO LASER SCANNER OR ITS MATERIALS. THE SOLE AND EXCLUSIVE LIABILITY TO FARO TECHNOLOGIES, INC., REGARDLESS OF THE FORM OF ACTION, SHALL NOT EXCEED THE PURCHASE PRICE OF THE MATERIALS DESCRIBED HEREIN.

THE INFORMATION CONTAINED IN THIS MANUAL IS SUBJECT TO CHANGE WITHOUT NOTICE AND DOES NOT REPRESENT A COMMITMENT ON THE PART OF FARO TECHNOLOGIES INC. ACCEPTANCE OF THIS DOCUMENT BY THE CUSTOMER CONSTITUTES ACKNOWLEDGMENT THAT IF ANY INCONSISTENCY EXISTS BETWEEN THE ENGLISH AND NON-ENGLISH VERSIONS, THE ENGLISH VERSION TAKES PRECEDENCE.

Table of contents

1. Introduction	1
2. Installation	1
3. Operation	1
4. Content of the Registration Report	3
Technical Support	5
Software License Agreement	i
Implementation Notes	iii
Trademarks.....	iii

1. Introduction

The Registration Report is a helpful add-on for SCENE or SCENE LT that extends the standard functionality by enabling the user to create reports of registration results of their scan projects. The generated reports can be exported to different file formats and may e.g. be used for internal audits or handed out to customers.

2. Installation

- 1) Open SCENE or SCENE LT
- 2) If you have a previous version of the app installed, remove this version first with the App Manager of SCENE or SCENE LT (available under **Tools > Apps**).
- 3) Install the downloaded app by doing one of the following:
 - Drag & Drop the app file (.fpp file) into SCENE.
 - Double click the app file in the Windows Explorer.
 - Use the App Manager to install the app.
- 4) Once installed, you should have this icon in your toolbar: 



This app is available in English language only but also runs if SCENE or SCENE LT are operated in other languages.

3. Operation

- 1) Open the workspace or scan project for which you would like to create the registration report.
- 2) Click the Registration Report icon  in the toolbar or select **Create Registration Report** in the drop down menu to generate the report.
- 3) Specify the storage location and the file format for the report.

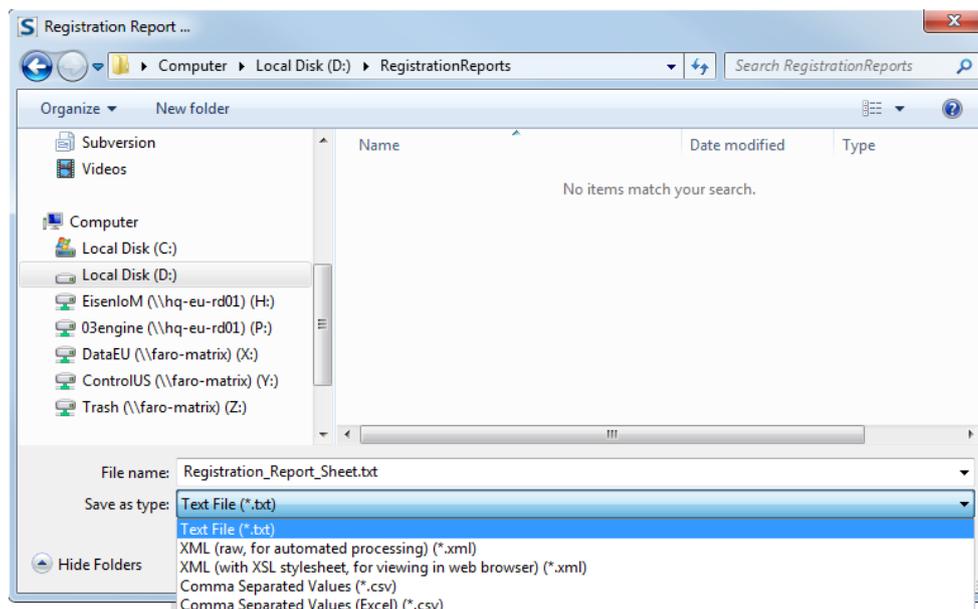


Figure 3-1: Save As Dialog

The following file formats are available:

- txt (Text File).
- xml (raw, for automated processing): The "raw" .xml export only generates an XML file, which you may use for further automatic processing.
- xml (with XSL stylesheet, for viewing in web browser):

The .xml with XSL stylesheet export is for viewing the report in your web browser. This export generates two files:

- An XSL file, which is a stylesheet that transforms XML to HTML.
- The main XML file, which is identical to the XML file from the "raw" XML export, except that it references the XSL stylesheet.

To view the report, open the .xml file in your web browser. Mozilla Firefox, Opera, Internet Explorer and Safari are supported. Google Chrome™ is not supported¹.

You may adjust the stylesheet to your own needs, and you may even use it to create arbitrary file formats. For more information, see <http://en.wikipedia.org/wiki/XSLT>.

- csv (comma separated values): The .csv for Excel file format exports the report depending on decimal and column delimiter used by Excel on the current system. These values are read from the registry and vary depending on the country (language settings of Excel). E.g. in the U.S. points are used as decimal and commas as column delimiter, in Germany commas are used as decimal and semicolons as column delimiter.

4) Once the report has been created, this dialog will come up:

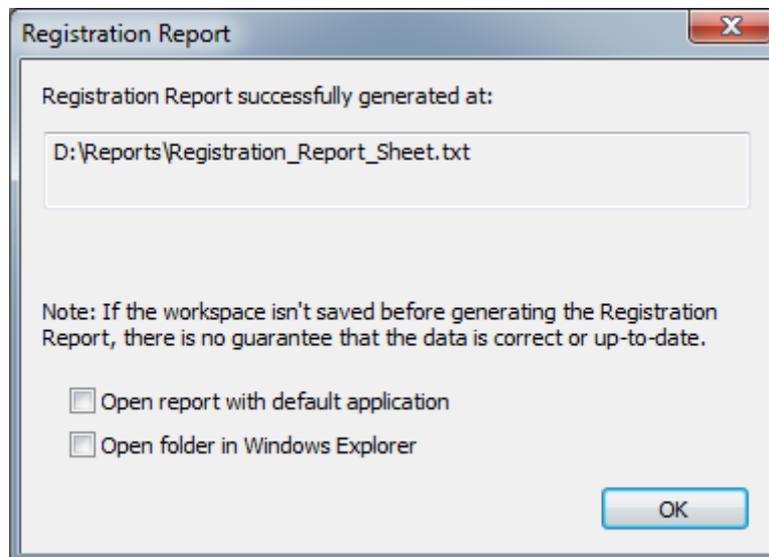


Figure 3-2: Registration Report dialog

¹ **Use this at your own risk:** To enable Google Chrome to display the xml file, you can use the commandline switch `--allow-file-access-from-files`. **Please note that this switch is a security risk!** Do not forget to disable it again when it is not needed anymore. For more information see:

<http://peter.sh/experiments/chromium-command-line-switches/>
<http://blog.chromium.org/2008/12/security-in-depth-local-web-pages.html>



Please note:

- The app will only be able to generate a report if the currently opened workspace or project has already been registered or else no report will be generated.
- You should save the workspace or scan project before creating the report or else it might happen that the generated data is inconsistent.
- When generating the report, positions, distances and angles are converted to the units specified in the options of SCENE or SCENE LT under **Tools > Options > Units > Display**.

4. Content of the Registration Report

The created report contains the following information:

- **General Information:**

- *Scan Quantity* - The total number of participating scans
- *Participating Scans* - The names of these scans
- *Tota _Correspondences* - The total number of the found correspondences

- **Scan fit information for each participating scan:**

- *Scan Name* - The name of the scan
- *Inclinometer Usage* – Indicates whether inclinometer readings have been used to level the scan during registration or not.
- *Position* – The calculated position of the scan in global coordinates.
- *Orientation Axis* – The calculated rotation axis of the scan in global coordinates.
- *Angle* – The calculated angle of rotation of the scan.
- *Point Distance* - The standard deviation of the distance between the local reference points and their corresponding references.
- *Number of Correspondences* – total number of correspondences found between the references of the evaluated scan and the references in other scans.
- *Correspondences* – list of all reference pairs used for scan placement. The value *Tension* describes the discrepancy in the global coordinate system between the position and the orientation of the two corresponding reference objects in Scan 1 and Scan 2. For corresponding reference points, the distance between their positions serves as input for the calculation of the tension. For planes, slabs or pipes, the position and the direction serve as input for the calculation of this value. Values close to zero indicate a good registration result.
- *Matched Objects* – list of reference objects that correspond to the references in the currently evaluated scan.
 - *Target* – The name of the corresponding reference object and its path in the workspace structure:

- In case there is a corresponding reference object in only one other scan, the displayed path is equivalent to the path of the corresponding object in this scan.
- In case there are corresponding references in more than one scan, the displayed object is treated as a "mean reference" (mean reference from several scans) and the displayed path of this "mean reference" is equivalent to the corresponding object of the currently evaluated scan.
- *Distance* – The distance between the reference of the currently evaluated scan and its corresponding reference.
- *Longitudinal* – The longitudinal distance between the reference of the currently evaluated scan and its corresponding reference.
- *Angular* – The angular distance between the reference of the currently evaluated scan and its corresponding reference.
- *Orthogonal* – The orthogonal distance between the reference of the currently evaluated scan and its corresponding reference.

Additional information in the XML file:

- *<Units>* – This node exists below each *<Scan>* and *<Matched_Objects>* node. It specifies the unit for all distances and angles in the report.

Technical Support

If you have any problem using one of our products, please follow these steps before contacting our Technical Support Team:

- Be sure to read the relevant sections of the documentation to find the help you need.
- Visit the FARO Customer Care area on the Web at www.faro.com to search our technical support database. This is available 24 hours a day 7 days a week.
- Document the problem you are experiencing. Be as specific as you can. The more information you have, the easier the problem will be to solve.
- If you still cannot resolve your problem, have your device's Serial Number available *before calling*.
- **Support Hours (Monday through Friday)**
North America:
8:00 a.m. to 7:00 p.m. Eastern Standard Time (EST).

Europe:
8:00 a.m. to 5:00 p.m. Central European Standard Time (CET).

Asia:
8:30 a.m. to 5:30 p.m. Singapore Standard Time (SST).

Japan:
9:00 a.m. to 5:00 p.m. Japan Standard Time (JST).

China:
8:30 a.m. to 5:30 p.m. China Standard Time (CST).

India:
9:30 a.m. to 5:30 p.m. India Standard Time (IST).

You can also e-mail or fax any problems or questions 24 hours a day.

- **Phone**
North America:
+1 800 736 2771, +1 407 333 3182 (Worldwide)

Mexico:
866-874-1154

Europe:
+800 3276 7378, +49 7150 9797-400 (Worldwide)

Asia:
+1 800 511 1360, +65 6511 1350 (Worldwide)

Japan:
+81 561 63 1411 (Worldwide)

China:
+400.677.6826

India:
1800.1028456

- **Fax**

North America:
+1 407-562-5294

Europe:
+800 3276 1737, +49 7150 9797-9400 (Worldwide)

Asia:
+65 6543 0111

Japan:
+81 561 63 1412

China:
+86 21 6494 8670

India:
+91 11.4646.5660

- **E-Mail**

North America:
support@faro.com

Europe:
support@faroEurope.com

Asia:
supportap@faro.com

Japan:
supportjapan@faro.com

China:
supportchina@faro.com

India:
supportindia@faro.com

E-Mails or Faxes sent outside regular working hours usually are answered before 12:00 p.m. the next working day. Should our staff be on other calls, please leave a voice mail message; calls are always returned within 4 hours. Please remember to leave a detailed description of your question and your device's Serial Number. Do not forget to include your name, fax number, telephone number and extension so we can reach you promptly.

Software License Agreement

This Software License Agreement is part of the operating manual for the product and software system which you have purchased from FARO TECHNOLOGIES INC. (collectively, the "Licensor"). By your use of the software you are agreeing to the terms and conditions of this Software License Agreement. Throughout this Software License Agreement, the term "Licensee" means the owner of the System.

I. The Licensor hereby grants the Licensee the non exclusive right to use the computer software described in this Operating Manual (the "Software"). The Licensee shall have no right to sell, assign, sub-license, rent or lease the Software to any third party without the Licensor's prior written consent.

II. The Licensor further grants the Licensee the right to make a backup copy of the Software media. The Licensee agrees that it will not decompile, disassemble, reverse engineer, copy, transfer, or otherwise use the Software except as permitted by this Agreement. The Licensee further agrees not to copy any written materials accompanying the Software.

III. The Licensee is licensed to use the Software only in the manner described in the Operating Manual. Use of the Software in a manner other than that described in the Operating Manual or use of the Software in conjunction with any non-Licensor product which decompiles or recompiles the Software or in any other way modifies the structure, sequence or function of the Software code, is not an authorized use, and further, such use voids the Licensor's set forth below.

IV. The only warranty with respect to the Software and the accompanying written materials is the warranty, if any, set forth in the Quotation/Purchase Order and Warranty Appendix B pursuant to which the Software was purchased from the Licensor.

V. THIS WARRANTY IS IN LIEU OF OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE SOFTWARE AND WRITTEN MATERIALS. IN NO EVENT WILL THE LICENSOR BE LIABLE FOR DAMAGES, INCLUDING ANY LOST PROFITS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, NOTWITHSTANDING THAT THE LICENSOR HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, THE LICENSOR WILL NOT BE LIABLE FOR ANY SUCH CLAIM BY ANY OTHER PARTY.

VI. In the event of any breach by the Licensee of this Agreement, the license granted hereby shall immediately terminate and the Licensee shall return the Software media and all written materials, together with any copy of such media or materials, and the Licensee shall keep no copies of such items.

VII. The interpretation of this Agreement shall be governed by the following provisions:

a. This Agreement shall be construed pursuant to and governed by the substantive laws of the State of Florida (and any provision of Florida law shall not apply if the law of a state or jurisdiction other than Florida would otherwise apply).

b. If any provision of this Agreement is determined by a court of competent jurisdiction to be void and non-enforceable, such determination shall not affect any other provision of this Agreement, and the remaining provisions of this Agreement shall remain in full force and effect. If any provision or term of this Agreement is

susceptible to two or more constructions or interpretations, one or more of which would render the provision or term void or non-enforceable, the parties agree that a construction or interpretation which renders the term of provision valid shall be favored.

c. This Agreement constitutes the entire Agreement, and supersedes all prior agreements and understandings, oral and written, among the parties to this Agreement with respect to the subject matter hereof.

VIII. If a party engages the services of an attorney or any other third party or in any way initiates legal action to enforce its rights under this Agreement, the prevailing party shall be entitled to recover all reasonable costs and expenses (including reasonable attorney's fees before trial and in appellate proceedings).

Implementation Notes

This software is based on pugixml library (<http://pugixml.org>).
pugixml is Copyright (C) 2006-2012 Arseny Kapoulkine.

Trademarks

FARO and FARO Laser Scanner Focus^{3D} are registered trademarks or trademarks of FARO Technologies Inc. All other brand and product names are trademarks or registered trademarks of their respective companies.

Microsoft, Windows, Windows Vista, Windows XP, Windows 7 and Internet Explorer are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Mozilla and Firefox are registered trademarks of the Mozilla Foundation.

Opera™ is a trademark of Opera Software ASA.

Safari is a trademark of Apple Inc., registered in the U.S. and other countries.

Google Chrome™ and Google™ is a Trademark of Google Inc.

FARO Technologies, Inc.

250 Technology Park
Lake Mary, FL 32746
Tel. (800)-736-2771 U.S. / +1 407-333-3182 Worldwide
E-Mail: support@faro.com

FARO Europe GmbH & Co. KG

Lingwiesenstrasse 11/2
D-70825 Korntal-Münchingen, Germany
Tel: +49 7150/9797-400 (FREECALL +800 3276 7378)
Fax: +49 7150/9797-9400 (FREEFAX +800 3276 1737)
E-Mail: support@faro.com

FARO Singapore Pte. Ltd.

No. 03 Changi South Street 2
#01-01 Xilin Districentre Building B
SINGAPORE 486548
TEL: +65 6511.1350
E-Mail: supportap@faro.com

FARO Japan, Inc.

716 Kumada, Nagakute-city,
Aichi, 480-1144, Japan
Tel: 0120-922-927, 0561-63-1411
FAX:0561-63-1412
E-Mail: supportjapan@faro.com

FARO (Shanghai) Co., Ltd.

1/F, Building No. 2,
Juxin Information Technology Park
188 Pingfu Road, Xuhui District
Shanghai 200231, China
Tel.: 400.677.6826
Email: supportchina@faro.com

FARO Business Technologies India Pvt. Ltd.

E-12, B-1 Extension,
Mohan Cooperative Industrial Estate,
New Delhi-110044
India
Tel.: 1800.1028456
Email: supportindia@faro.com

FARO®

