

Dynamic Content Essentials

21.07

User Manual

07 - 2021

Contents

- 1. Copyright Notice.....5**
 - 1.1. Third party license information.....6
- 2. About Dynamic Content Essentials..... 29**
- 3. Dynamic Content..... 30**
 - 3.1. Welcome to the Dynamic Content User Guide.....30
 - 3.2. Getting Started.....30
 - 3.3. Dynamic Content Basics.....33
 - 3.3.1. Introducing Dynamic Content.....33
 - 3.3.2. Step 1: Create an Adobe Illustrator Template.....36
 - 3.3.3. Step 2: Link the XML file to the Illustrator document.....37
 - 3.3.4. Step 3: Work with Changes in XML Content.....42
 - 3.3.5. Creating Design Variants (Line Extensions).....44
 - 3.3.6. Relink text elements to different languages.....46
 - 3.4. Viewing XML Content in Dynamic Content.....47
 - 3.4.1. The Dynamic Content Palette.....47
 - 3.4.2. Viewing XML Information.....60
 - 3.4.3. Filter Options for the XML Tree.....62
 - 3.4.4. Manipulating the XML Tree.....66
 - 3.5. Managing Changes to the XML Content.....68
 - 3.5.1. How Dynamic Content Deals with Changes.....68
 - 3.5.2. Approving Changes in the External XML File.....69
 - 3.5.3. Applying Text Edits in Illustrator to the XML File.....70
 - 3.5.4. Creating New XML Files in Illustrator.....70
 - 3.6. Editing Dynamic Objects.....72
 - 3.6.1. What is a Dynamic Object?.....73
 - 3.6.2. Which Standard Illustrator Edits Are Allowed?.....73
 - 3.6.3. Inserting Additional XML Elements in a Dynamic Object.....74
 - 3.6.4. Formatting Multiple Elements in a Single Dynamic Object.....74
 - 3.6.5. Fit Text Frame to Contents / Fit Contents to Text Frame.....76
 - 3.6.6. Editing the Text of an XML Element.....77
 - 3.6.7. Making minor layout edits.....79
 - 3.6.8. Releasing a Dynamic Object to regular text.....80
 - 3.6.9. Exchanging Dynamic Content Documents.....80
 - 3.7. Styling your Dynamic Objects.....81
 - 3.7.1. Two Approaches to Text Styling.....81
 - 3.7.2. Solving Text Overflow Problems.....94
 - 3.8. Dynamic Content Preferences.....94
 - 3.8.1. XML Standard.....95

3.8.2. Default Formatting of Dynamic Objects.....	95
3.8.3. Style Mapping Preferences.....	96
3.8.4. Updating and Relinking.....	97
3.8.5. WebCenter Integration.....	98
3.8.6. Other.....	99
3.9. Appendix: Introduction to XML.....	99
3.9.1. What is XML.....	99
3.9.2. Semantic Markup.....	99
3.9.3. Tags and Attributes.....	100
3.9.4. What is IPC XML.....	100
3.9.5. The IPC XML Schema.....	101
3.9.6. What is GS1 XML.....	102
3.10. Glossary.....	102
4. Dynamic Art.....	104
4.1. About the Dynamic Art plug-in.....	104
4.2. Why Use Dynamic Art?.....	104
4.3. The Dynamic Art Palette.....	105
4.4. The Content Types palette.....	106
4.5. Dynamic Art on the Canvas.....	108
4.6. Working with Dynamic Art.....	108
4.6.1. Create a Dynamic Art Object.....	108
4.6.2. Viewing and Navigating to Dynamic Art.....	109
4.6.3. Fill Type Objects with Dummy Text.....	110
4.6.4. Edit and Delete Dynamic Art Objects.....	110
4.6.5. Define Properties for Type Art.....	110
4.7. Export XML Template.....	113
4.8. Saving and Loading Dynamic Art Sets.....	114
4.9. Dynamic Art Preferences.....	114
5. Dynamic Barcodes.....	116
5.1. What is a barcode ?.....	116
5.2. Getting Started with Dynamic Barcodes.....	116
5.3. Using Dynamic Barcodes in Unlicensed Mode.....	118
5.4. Dynamic Barcodes Basics.....	118
5.4.1. Creating a Barcode.....	119
5.4.2. Editing a Barcode.....	122
5.4.3. Setting Barcode Parameters to Default.....	122
5.4.4. Barcode Placeholders.....	123
5.4.5. Expand.....	127
5.5. Dynamic Barcodes Advanced.....	128
5.5.1. Choosing a Font Standard.....	128
5.5.2. Using Dynamic Content with Dynamic Barcodes.....	129
5.5.3. Barcode Protection.....	129

- 5.5.4. Exporting Documents with Barcodes..... 131
- 5.6. Barcode Recognition..... 132
 - 5.6.1. Supported Barcode Types and known limitations..... 133
- 5.7. Barcode Types and Parameters..... 134
 - 5.7.1. Supported Barcode Types..... 134
 - 5.7.2. Barcode Types..... 144
 - 5.7.3. Barcode Parameters..... 187
- 5.8. Barcode Parameters from the Job Folder..... 199
 - 5.8.1. Connecting to a Job Folder..... 200
 - 5.8.2. Connect Dynamic Barcodes to Job Setup..... 201
 - 5.8.3. Use Barcode parameters from Job Setup..... 201
 - 5.8.4. Updating barcode parameters from Job Setup..... 203
- 6. Free Form Tables..... 204**
 - 6.1. Introduction..... 204
 - 6.2. Free Form Table XML language..... 204
 - 6.2.1. XML definition of the Layout section..... 204
 - 6.2.2. Link between the data and the layout..... 207
 - 6.2.3. Namespace 'egt' and language versioning..... 207
 - 6.3. Creating a Free Form Table..... 208
 - 6.3.1. Element Concatenation..... 211
 - 6.3.2. Cell Protection..... 211
 - 6.4. Updating a Free Form Table..... 211

1. Copyright Notice

© Copyright 2021 Esko Software BV, Gent, Belgium

All rights reserved. This material, information and instructions for use contained herein are the property of Esko Software BV. The material, information and instructions are provided on an AS IS basis without warranty of any kind. There are no warranties granted or extended by this document. Furthermore Esko Software BV does not warrant, guarantee or make any representations regarding the use, or the results of the use of the software or the information contained herein. Esko Software BV shall not be liable for any direct, indirect, consequential or incidental damages arising out of the use or inability to use the software or the information contained herein.

The information contained herein is subject to change without notice. Revisions may be issued from time to time to advise of such changes and/or additions.

No part of this document may be reproduced, stored in a data base or retrieval system, or published, in any form or in any way, electronically, mechanically, by print, photoprint, microfilm or any other means without prior written permission from Esko Software BV.

This document supersedes all previous dated versions.

PANTONE® Colors displayed in the software application or in the user documentation may not match PANTONE-identified standards. Consult current PANTONE Color Publications for accurate color. PANTONE® and other Pantone trademarks are the property of Pantone LLC. © Pantone LLC, 2015

Pantone is the copyright owner of color data and/or software which are licensed to Esko to distribute for use only in combination with Studio Visualizer. PANTONE Color Data and/or Software shall not be copied onto another disk or into memory unless as part of the execution of Studio Visualizer.

This software is based in part on the work of the Independent JPEG Group.

Portions of this software are copyright © 1996-2002 The FreeType Project (www.freetype.org). All rights reserved.

Portions of this software are copyright 2006 Feeling Software, copyright 2005-2006 Autodesk Media Entertainment.

Portions of this software are copyright ©1998-2003 Daniel Veillard. All rights reserved.

Portions of this software are copyright ©1999-2006 The Botan Project. All rights reserved.

Part of the software embedded in this product is gSOAP software. Portions created by gSOAP are Copyright ©2001-2004 Robert A. van Engelen, Genivia inc. All rights reserved.

Portions of this software are copyright ©1998-2008 The OpenSSL Project and ©1995-1998 Eric Young (eay@cryptsoft.com). All rights reserved.

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

Adobe, the Adobe logo, Acrobat, the Acrobat logo, Adobe Creative Suite, Illustrator, InDesign, PDF, Photoshop, PostScript, XMP and the Powered by XMP logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation in the United States and other countries.

SolidWorks is a registered trademark of SolidWorks Corporation.

Portions of this software are owned by Spatial Corp. 1986 2003. All Rights Reserved.

JDF and the JDF logo are trademarks of the CIP4 Organisation. Copyright 2001 The International Cooperation for the Integration of Processes in Prepress, Press and Postpress (CIP4). All rights reserved.

The Esko software contains the RSA Data Security, Inc. MD5 Message-Digest Algorithm.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems in the U.S. and other countries.

Part of this software uses technology by Best Color Technology (EFI). EFI and Bestcolor are registered trademarks of Electronics For Imaging GmbH in the U.S. Patent and Trademark Office.

Contains PowerNest library Copyrighted and Licensed by Alma, 2005 - 2007.

Part of this software uses technology by GlobalVision. ArtProof and ScanProof are registered trademarks of GlobalVision Inc.

Part of this software uses technology by Qoppa Software. Copyright © 2002-Present. All Rights Reserved.

All other product names are trademarks or registered trademarks of their respective owners.

Correspondence regarding this publication should be forwarded to:

Esko Software BV

Kortrijksesteenweg 1095

B - 9051 Gent

info.eur@esko.com

1.1. Third party license information

This product includes OpenImageIO.

BSD 3-Clause License

Copyright (c) 2008-present by Contributors to the OpenImageIO project. All Rights Reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes OpenJDK.

The GNU General Public License (GPL)

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
- b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.
- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

- a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
- c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation

of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later

version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

One line to give the program's name and a brief idea of what it does.

Copyright (C) <year> <name of author>

This program is free software; you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type 'show w'. This is free software, and you are welcome to redistribute it under certain conditions; type 'show c' for details.

The hypothetical commands 'show w' and 'show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than 'show w' and 'show c'; they could even be

mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program 'Gnomovision' (which makes passes at compilers) written by James Hacker.

signature of Ty Coon, 1 April 1989

Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

"CLASSPATH" EXCEPTION TO THE GPL

Certain source files distributed by Oracle America and/or its affiliates are subject to the following clarification and special exception to the GPL, but only where Oracle has expressly included in the particular source file's header the words "Oracle designates this particular file as subject to the "Classpath" exception as provided by Oracle in the LICENSE file that accompanied this code."

Linking this library statically or dynamically with other modules is making a combined work based on this library. Thus, the terms and conditions of the GNU General Public License cover the whole combination.

As a special exception, the copyright holders of this library give you permission to link this library with independent modules to produce an executable, regardless of the license terms of these independent modules, and to copy and distribute the resulting executable under terms of your choice, provided that you also meet, for each linked independent module, the terms and conditions of the license of that module. An independent module is a module which is not derived from or based on this library. If you modify this library, you may extend this exception to your version of the library, but you are not obligated to do so. If you do not wish to do so, delete this exception statement from your version.

This product includes zlib.

(C) 1995-2017 Jean-loup Gailly and Mark Adler

This software is provided 'as-is', without any express or implied warranty. In no event will the authors be held liable for any damages arising from the use of this software.

Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly Mark Adler
 jloup@gzip.org madler@alumni.caltech.edu

This product includes curl.

COPYRIGHT AND PERMISSION NOTICE

Copyright (c) 1996 - 2020, Daniel Stenberg, <daniel@haxx.se>, and many contributors, see the THANKS file.

All rights reserved.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

 This product includes patented technology.

This product and use of this product is under license from Markzware under U.S. Patent No. 5,963,641.

 This product includes lzw-ab.

Copyright (c) David Bryant
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of Conifer Software nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE REGENTS OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes OpenJPEG.

The copyright in this software is being made available under the 2-clauses BSD License, included below. This software may be subject to other third party and contributor rights, including patent rights, and no such rights are granted under this license.

Copyright (c) 2002-2014, Universite catholique de Louvain (UCL), Belgium
 Copyright (c) 2002-2014, Professor Benoit Macq
 Copyright (c) 2003-2014, Antonin Descampe
 Copyright (c) 2003-2009, Francois-Olivier Devaux
 Copyright (c) 2005, Herve Drolon, FreeImage Team
 Copyright (c) 2002-2003, Yannick Verschueren
 Copyright (c) 2001-2003, David Janssens
 Copyright (c) 2011-2012, Centre National d'Etudes Spatiales (CNES), France
 Copyright (c) 2012, CS Systemes d'Information, France

All rights reserved.

Redistribution and use in source and binary forms, with or without

modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS 'AS IS' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes FreeType.

Portions of this software are copyright (C) 2014 The FreeType Project (www.freetype.org) licensed under the Freetype License. All rights reserved.

 This product includes QtCopyDialog.

Copyright (c) 2009 Nokia Corporation and/or its subsidiary(-ies). All rights reserved.

BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

 This product includes QtMigration.

Copyright (C) 2013 Digia Plc and/or its subsidiary(-ies).

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of Digia Plc and its Subsidiary(-ies) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE."

This product includes QtService.

Copyright (C) 2010 Nokia Corporation and/or its subsidiary(-ies).

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of Nokia Corporation and its Subsidiary(-ies) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes QtSingleApplication.

Copyright (C) 2010 Nokia Corporation and/or its subsidiary(-ies). All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of Nokia Corporation and its Subsidiary(-ies) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes QtSql.

Copyright (c) 2009 Nokia Corporation and/or its subsidiary(-ies).

BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR

PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

 This product includes Qt.

The Qt Toolkit is Copyright (C) 2015 Digia Plc and/or its subsidiary(-ies).

 This product includes svgio.

Copyright Oleg Maximenko 2014.
 Distributed under the Boost Software License, Version 1.0.

 This product includes appleseed.
 The MIT License (MIT)

Copyright (c) 2010-2013 Francois Beaune, Jupiter Jazz Limited
 Copyright (c) 2014-2019 The appleseedhq Organization

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

 This product includes bcd.

Copyright (c) 2017 Malik Boughida and Tamy Boubekeur. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

You are under no obligation whatsoever to provide any bug fixes, patches, or upgrades to the features, functionality or performance of the source code ("Enhancements") to anyone; however, if you choose to make your Enhancements

available either publicly, or directly to the authors of this software, without imposing a separate written license agreement for such Enhancements, then you hereby grant the following license: a non-exclusive, royalty-free perpetual license to install, use, modify, prepare derivative works, incorporate into other computer software, distribute, and sublicense such enhancements or derivative works thereof, in binary and source code form.

This product includes glad.

The MIT License (MIT)

Copyright (c) 2013-2018 David Herberth

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This product includes murmurhash3.

MurmurHash3 was written by Austin Appleby, and is placed in the public domain. The author hereby disclaims copyright to this source code.

This product includes Botan.

Copyright (C) 1999-2020 The Botan Authors
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes pugixml.

MIT License

Copyright (c) 2006-2019 Arseny Kapoulkine

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without

restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

 This product includes GLEW: The OpenGL Extension Wrangler Library.

The OpenGL Extension Wrangler Library
 Copyright (C) 2002-2007, Milan Ikits <milan ikits[at]ieee org>
 Copyright (C) 2002-2007, Marcelo E. Magallon <mmagallo[at]debian org>
 Copyright (C) 2002, Lev Povalahev
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * The name of the author may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Mesa 3-D graphics library
 Version: 7.0

Copyright (C) 1999-2007 Brian Paul All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL BRIAN PAUL BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2007 The Khronos Group Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and/or associated documentation files (the "Materials"), to deal in the Materials without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Materials, and to permit persons to whom the Materials are furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Materials.

THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.

This product includes OpenSSL.

Copyright (c) 1998-2017 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OPENSSL PROJECT ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OPENSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes OpenSSL.

Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)
All rights reserved.

Redistribution and use in source and binary forms, with or without

```

modification, are permitted provided that the following conditions
are met:
1. Redistributions of source code must retain the copyright
  notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software
  must display the following acknowledgement:
  "This product includes cryptographic software written by
  Eric Young (eay@cryptsoft.com)"
  The word 'cryptographic' can be left out if the routines from the library
  being used are not cryptographic related :-).
4. If you include any Windows specific code (or a derivative thereof) from
  the apps directory (application code) you must include an acknowledgement:
  "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

```

```

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE
ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE
FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL
DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS
OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
SUCH DAMAGE.

```

```

-----
This product includes JPEGLib.
This software is copyright (C) 1991-2016, Thomas G. Lane, Guido Vollbeding.
All Rights Reserved.

```

```

This software is based in part on the work of the Independent JPEG Group.
-----

```

```

This product includes tesseract.

Copyright (C) 2016 Google, Inc. Licensed under the Apache License, Version 2.0
-----

```

```

This product includes cereal.

Copyright (c) 2014, Randolph Voorhies, Shane Grant
All rights reserved.

```

```

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions are met:
* Redistributions of source code must retain the above copyright
  notice, this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright
  notice, this list of conditions and the following disclaimer in the
  documentation and/or other materials provided with the distribution.
* Neither the name of cereal nor the
  names of its contributors may be used to endorse or promote products
  derived from this software without specific prior written permission.

```

```

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL RANDOLPH VOORHIES OR SHANE GRANT BE LIABLE FOR ANY
DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND
ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
-----

```

```

This product includes robin-map.

MIT License

```

Copyright (c) 2017 Tessil

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

 This product includes LibTIFF.

Copyright (c) 1988-1997 Sam Leffler
 Copyright (c) 1991-1997 Silicon Graphics, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that (i) the above copyright notices and this permission notice appear in all copies of the software and related documentation, and (ii) the names of Sam Leffler and Silicon Graphics may not be used in any advertising or publicity relating to the software without the specific, prior written permission of Sam Leffler and Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

 This product includes libpng.

Copyright (c) 2000-2002 Glenn Randers-Pehrson

The PNG Reference Library is supplied "AS IS". The Contributing Authors and Group 42, Inc. disclaim all warranties, expressed or implied, including, without limitation, the warranties of merchantability and of fitness for any purpose. The Contributing Authors and Group 42, Inc. assume no liability for direct, indirect, incidental, special, exemplary, or consequential damages, which may result from the use of the PNG Reference Library, even if advised of the possibility of such damage. There is no warranty against interference with your enjoyment of the library or against infringement. There is no warranty that our efforts or the library will fulfill any of your particular purposes or needs. This library is provided with all faults, and the entire risk of satisfactory quality, performance, accuracy, and effort is with the user.

 This product includes OpenShadingLanguage.

BSD 3-Clause License

Copyright (c) 2009-2019 Sony Pictures Imageworks Inc., et al.
 All Rights Reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes libxml2.

Copyright (C) 1998-2012 Daniel Veillard. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

 This product includes ICC Profiles.

Some ICC Profiles were created by FFEI Ltd. (www.ffei.co.uk) using Fujifilm ColourKit Profiler Suite (www.colourprofiling.com)

 This product includes ICC Profiles.

Some ICC profiles are copyright (C) by European Color Initiative, www.eci.org

 This product includes ICC Profiles.

Some ICC profiles are copyright (C) of WAN-IFRA, www.wan-ifra.org

 This product includes ICC Profiles.

Some ICC profiles are copyright (C) IDEAlliance(R). G7(R), GRACol(R) and SWOP(R) are all registered trademarks of IDEAlliance(C).

 This product includes PANTONE Color Libraries.

PANTONE® and other Pantone trademarks are the property of Pantone LLC. Pantone is a wholly owned subsidiary of X-Rite, Incorporated.

 This product includes gSOAP.

EXHIBIT B.

Part of the software embedded in this product is gSOAP software. Portions created by gSOAP are Copyright (C) 2001-2007 Robert A. van Engelen, Genivia inc. All Rights Reserved.

THE SOFTWARE IN THIS PRODUCT WAS IN PART PROVIDED BY GENIVIA INC AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes LibTIFF.

Copyright (c) 1988-1997 Sam Leffler
 Copyright (c) 1991-1997 Silicon Graphics, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that (i) the above copyright notices and this permission notice appear in all copies of the software and related documentation, and (ii) the names of Sam Leffler and Silicon Graphics may not be used in any advertising or publicity relating to the software without the specific, prior written permission of Sam Leffler and Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

 This product includes llvm.

University of Illinois/NCSA
 Open Source License

Copyright (c) 2003-2019 University of Illinois at Urbana-Champaign.
 All rights reserved.

Developed by:

LLVM Team

University of Illinois at Urbana-Champaign

<http://llvm.org>

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal with the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimers.

- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimers in the documentation and/or other materials provided with the distribution.
- * Neither the names of the LLVM Team, University of Illinois at Urbana-Champaign, nor the names of its contributors may be used to endorse or promote products derived from this Software without specific prior written permission.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE CONTRIBUTORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS WITH THE SOFTWARE.

This product includes OpenSSL.

Copyright (c) 1998-2017 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OPENSSL PROJECT ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OPENSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes OpenSSL.

Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com)
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:
 "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)"
 The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related :-).
4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement:
 "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes xxHash.

xxHash Library
 Copyright (c) 2012-2014, Yann Collet
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes lz4.

Copyright (C) 2011-present, Yann Collet.
 BSD 2-Clause License (<http://www.opensource.org/licenses/bsd-license.php>)

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes ICU.

Copyright (c) 1995-2014 International Business Machines Corporation and others
 All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

 This product includes JBIG2Lib.

Portions of this product copyrights (C) 2002 Glyph & Cog, LLC.

 This product includes PCRE.

Copyright (c) 1997-2016 University of Cambridge
 All rights reserved.

Copyright(c) 2010-2016 Zoltan Herczeg
 All rights reserved.

Copyright(c) 2009-2016 Zoltan Herczeg
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of the University of Cambridge nor the names of any contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE)

ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes QtSvg.

The Qt Toolkit is Copyright (C) 2015 Digia Plc and/or its subsidiary(-ies).

 This product includes Little CMS.

Little CMS
 Copyright (c) 1998-2011 Marti Maria Saguer

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

 This product includes ZXing C++ Library.

 NOTICES FOR C++ Big Integer Library

I, Matt McCutchen, the sole author of the original Big Integer Library, waive my copyright to it, placing it in the public domain. The library comes with absolutely no warranty.

 This product includes XercesC.

NOTICE file corresponding to section 4(d) of the Apache License, Version 2.0, in this case for the Apache Xerces distribution.

This product includes software developed by
 The Apache Software Foundation (<http://www.apache.org/>).

Portions of this software were originally based on the following:
 - software copyright (c) 1999, IBM Corporation., <http://www.ibm.com>.

 This product includes leptonica.

- Copyright (C) 2001-2016 Leptonica. All rights reserved.
-
- Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
- 1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- 2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
-
- THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
- ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT

- LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
- A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL ANY
- CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
- EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
- PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
- PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY
- OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
- NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
- SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes FCollada.

Copyright 2006 Feeling Software. All rights reserved.

Copyright 2005-2006 Feeling Software and
Copyright 2005-2006 Autodesk Media Entertainment.

Copyright (C) 1998-2003 Daniel Veillard. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This product includes tessdata.

Inc. Licensed under the Apache License, Version 2.0

This product includes XMP Toolkit.

Copyright (c) 1999 - 2010, Adobe Systems Incorporated
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- * Neither the name of Adobe Systems Incorporated, nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes openexr.

Copyright Contributors to the OpenEXR Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

* Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

 This product includes Bonjour SDK.

Copyright (c) 2003-2004, Apple Computer, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of Apple Computer, Inc. ("Apple") nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY APPLE AND ITS CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL APPLE OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

2. About Dynamic Content Essentials

The 'Dynamic Content Essentials for Illustrator' bundle offers basic Dynamic Content functionality.

It combines the following plug-ins:

- [Dynamic Content](#) on page 30
- [Dynamic Art](#) on page 104
- [Dynamic Barcodes](#) on page 116 in an unlicensed mode. See [Using Dynamic Barcodes in Unlicensed Mode](#) on page 118

3. Dynamic Content

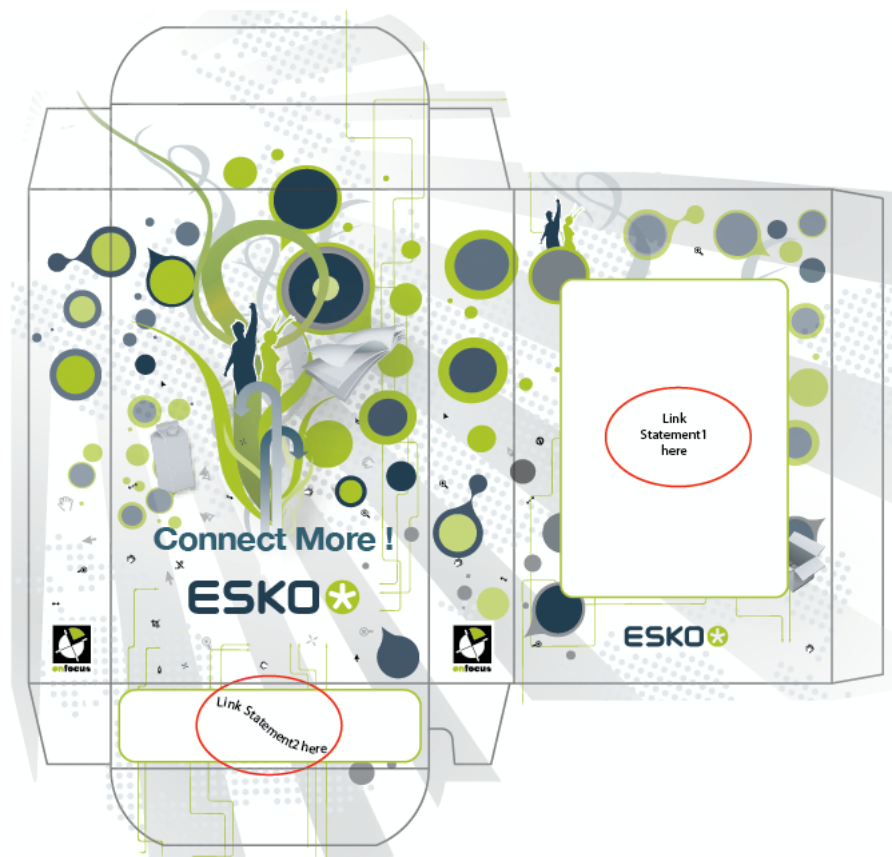
3.1. Welcome to the Dynamic Content User Guide

Welcome to the Esko Dynamic Content user documentation. This User Guide will provide you with all the knowledge and skills you need to integrate the Dynamic Content plug-in into your daily workflow.

3.2. Getting Started

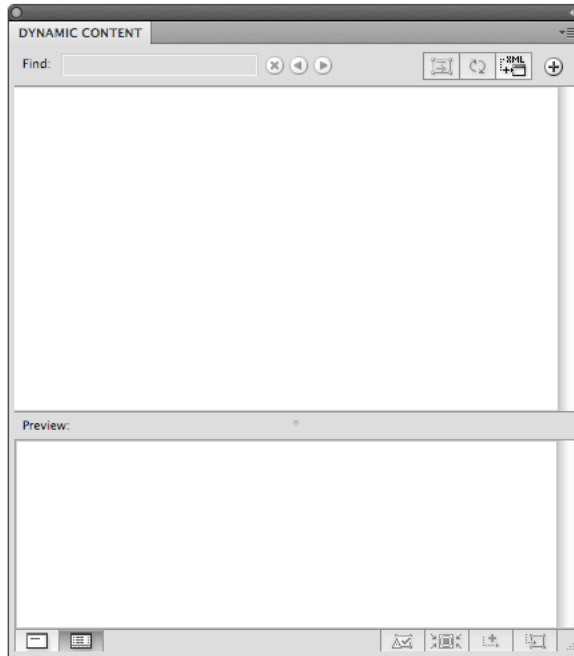
To introduce you to the concept of Dynamic Content, follow the five simple steps below to create dynamic links between an Adobe Illustrator document and a very basic, non-IPC simple XML file.

1. In the `Sample Files` folder on the installation disk image you will find an Illustrator file called: `Esko Connect More.ai`. **Open the sample file with Adobe Illustrator and:**
 - a) note the two text objects that are present in the design: `Link Statement1 here` here and `Link Statement2 here`.




- b) choose **Windows > Esko > Dynamic Content > Dynamic Content.**

The **Dynamic Content** palette appears.




2. Generate a dynamic link with an XML file:

- a) click the **Add XML file...** button. 
- b) browse for the `GettingStarted.xml` file included on the `Sample Files` folder on the installation disk image.

3. Link the text objects with the XML elements:

- a) select the text box containing `Link with Statement1`.
- b) in the Dynamic Content palette, expand `GettingStarted.xml` and the `body` entry, and select the entry `Statement1`.



- c) Click the **Make Dynamic Object** button. 
- d) Repeat for Statement 2.

4. Change the text style using the normal Illustrator text tools:

After linking an XML element to a text object, its contents are protected from accidental changes, but you can still select text with the text tool and change its style (e.g. assign another typeface or text color).

5. Change the XML file.

To experience the dynamic behavior of the link that you established between the Illustrator text object and the XML file, go ahead and:

- a) open the `GettingStarted.xml` file in a text editor of your choice (e.g. TextEdit on Mac OS, or Notepad on Windows).
- b) change the content of the first text statement. For example, change **Connect** to **Esko** into **Connect with Esko**. If you have not changed your preferences from the default, the plug-in will detect your changes to the linked XML file, and it will ask you to update the artwork.

3.3. Dynamic Content Basics

In this section, you will learn the basic concepts of the Dynamic Content plug-in, and experience a simple, typical workflow that guides you through your first steps in Dynamic Content.

3.3.1. Introducing Dynamic Content

Esko's Dynamic Content for Adobe® Illustrator® brings the power of XML-based automation to Adobe® Illustrator® CS5, CS5.1, CS6 and CS7 on Mac and Windows.

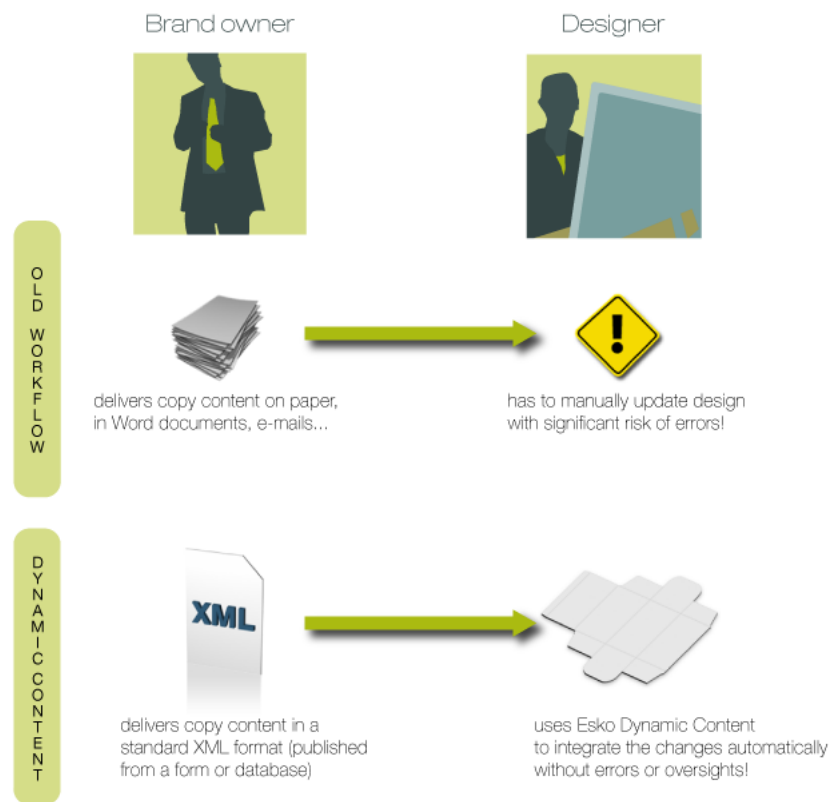
Why Dynamic Content?

Esko Dynamic Content allows packaging designers to add externally maintained content elements such as legal copy or nutritional information to a packaging design. This solves an increasingly common problem in the designer's day to day work: human error in copied content.

The ever growing number of stock keeping units that are brought onto the market by brand owners has resulted in an explosive growth in the **volume of artwork** that needs to be created for all the packaging of each unit. At the same time, the designs themselves become more and more complex in their competition for the consumer's attention.

Many designs share pieces of content. Some content is **mandatory**, required by regulatory instances such as the FDA, EMEA, or national bodies. Other content simply **recurs** on different variants of a shared design.

The end result is the same: an **increasing number of human interactions**, often of the "copy-paste" type, that at the same time increases the risk of errors slipping into the design. Errors in artwork are wasteful, generating rework, delays in product launches and sometimes even requiring product recalls.



Benefits of Using Dynamic Content

The Dynamic Content plug-in helps automate the insertion and updating of externally maintained content into a design. This prevents a number of common problems, and it saves valuable production time by eliminating repetitive manual tasks.

Some **typical problems prevented by a Dynamic Content workflow:**

- Typing errors;
- Wrong versions of copy text or barcodes are used in the final design;
- Cut-and-paste errors (e.g. when copy text is provided in a Microsoft Word document or PDF, and the designer has to manually copy this into the Illustrator document);
- Text overflows;
- Shared elements on design variants are not synchronised.

Because Dynamic Content allows you to keep this mandatory or shared content separated from the Illustrator document, it also **eliminates repetitive and time consuming updates:** simply modify the external XML file to update the text, barcodes, and nutrition tables on the design. Review cycles have never been this easy.

A Typical Workflow in Dynamic Content

A typical Dynamic Content-based design workflow includes an exchange of information between brand owners and designers. Often, the content to be used in a design will change multiple times during the design and production process, and it is in these cases that Dynamic Content will prove its worth.

A sample workflow for the use of Dynamic Content could be the following:

Stage	Description
1	The brand owner's marketing department draws up the text that needs to appear on the packaging design. The text is entered into a PDF form or a content management system, which can export an XML file.
2	The brand owner sends the PDF form or XML file containing the text to the designer.
3	The designer produces a packaging design in Adobe Illustrator and links the text elements from the XML file to text objects in the Illustrator template. In the GS1 workflow, the designer can generate the "Response" XML and send it back to the brand owner. This Response message tells the brand owner what items were used in the artwork and how many times.
4	Later, the brand owner makes changes to the text, produces a new XML file and sends this to the designer.
5	The designer replaces the original XML file on his disk with the new version. Dynamic Content automatically detects the changes, and immediately alerts the designer. It clearly shows exactly what has changed, and where.
6	Based on the alerts displayed in Dynamic Content, the designer can very quickly accept automatically updated text, or make any required formatting changes. There is no need for copying, pasting, or any other manual and error-prone operations, and Dynamic Content alerts the designer to problems such as text overflow.
7	Thanks to Dynamic Content, stages 4 - 6 can occur repeatedly without losing time or introducing errors.

XML Basics

XML stands for Extensible Markup Language, and it is a markup language similar to HTML. However, where HTML describes the layout of a web page, XML markup describes the contents and the structure of a document.

Below is an example of a basic XML document:

```
<?xml version="1.0" encoding="UTF-8"?>
<body>
<p> This is a very cool product! </p>
</body>
```

XML documents are often used to exchange data or textual content.

In the context of the Dynamic Content plug-in, XML is a useful format because:

- it separates content- the text itself- from layout and presentation, which will be defined by Illustrator text objects.
- it describes and contains the structure of the text that must be used on a design.

For more information on the XML format, please refer to the Appendix "An Introduction to XML".

3.3.2. Step 1: Create an Adobe Illustrator Template

Before you can start linking XML-sourced content into your work, you need to prepare a design in Adobe Illustrator.

We will refer to the Illustrator design as the "template", which will later hold the placeholder text objects in which you will later insert text from an XML file.

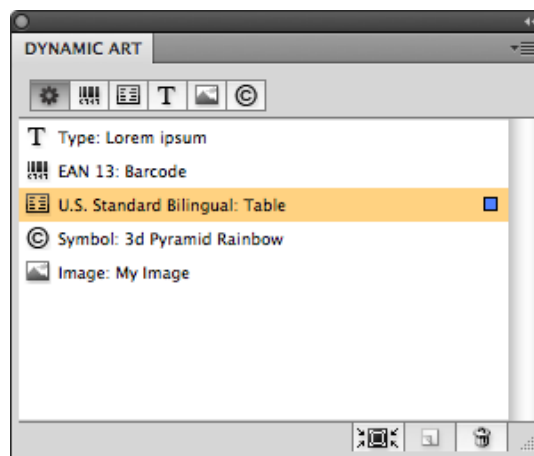
Dynamic Content allows you to use your complete Illustrator toolset as usual:

1. Create a design in Adobe Illustrator.
2. Create Text objects using the Illustrator tools, including:
 - the Type Tool
 - the Area Type Tool
 - the Type on a Path Tool
 - the Vertical Type Tool
 - the Vertical Area Type Tool
 - the Vertical Type on a Path Tool
 - Threaded text

Note:

Dynamic Content also supports Right-To-Left text in Middle-Eastern languages.

3. Create nutrition tables using the Esko Dynamic Tables plug-in, if required for the design.
4. Create barcodes using the Esko Dynamic Barcodes plug-in, if required for the design.
5. Add the text objects, tables, barcodes, Illustrator symbols, and external images to the **Dynamic Art** palette. If you do, it will be much easier for the person linking the XML content to find linkable objects. Proceed as follows:
 - a) Choose **Window > Esko > Dynamic Art** to display the Dynamic Art palette.
 - b) Select all the Dynamic Art objects you created in the previous steps, and click **New Dynamic Art** on the **Dynamic Art** palette.



Dynamic Art automatically fills any empty text objects with Lorem ipsum text.

Note:

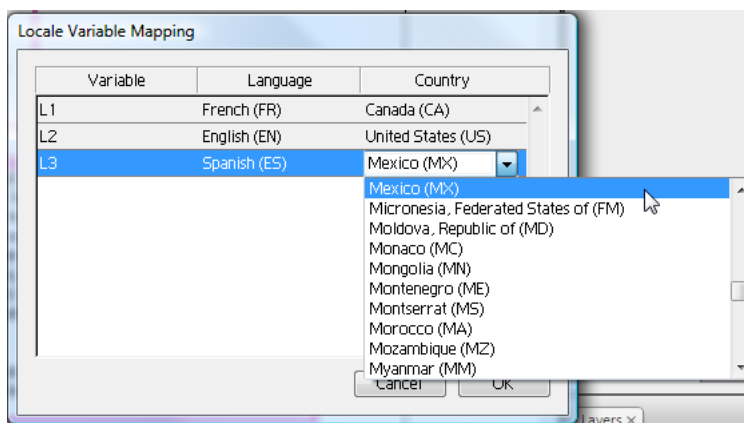
Dynamic Content will apply the last style in the Illustrator text object to any text that is linked from the XML file. For objects that contain different styles or formats, only the last style will be retained.

If this is a multilingual product and you will be using variable locale mapping (initially configured in the **Properties** dialog for a text object on the Dynamic Art palette; see the *Dynamic Art User Guide* for more information), set the locale variables before adding the XML content file.

Map Locale Variables (only for IPC XML standard)

If you are using locale variables to define the language of the text objects' content, define the variables before adding the XML content file.

1. On the Dynamic Content palette's fly-out menu, choose **Variable Locale Mapping**.
2. In the **Locale Variable Mapping** dialog box, click in the **Language** column next to the first variable you defined and choose the desired language from the list. Do the same thing in the **Country** column and click **OK**. Repeat for the other variables.



When you auto link, Dynamic Content compares the locale of an XML element to the value of the locale variable of a text object, and if they match, it fills the text object with content from the XML element.

3.3.3. Step 2: Link the XML file to the Illustrator document

Once your basic design or template is complete, you have to link the XML file with your source text to the Illustrator template. You can do this automatically or manually.

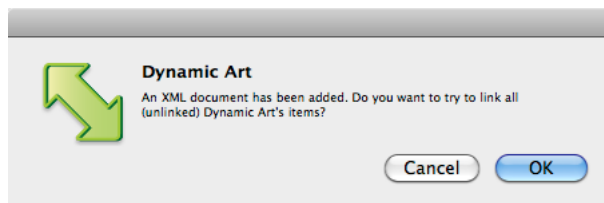
Automatic linking is possible if there is only one corresponding entry in the XML file for each type of dynamic object in the Illustrator document. You must link **manually** if there are more entries for each type of dynamic objects in the XML file than there are placeholders in the Illustrator document.

Using the option **Display Options > Highlight Dynamic Objects** from the fly-out menu, you can add a highlight frame to the dynamic object. This highlight frame will display additional information about the dynamic object. See [Highlighting the dynamic object](#) on page 41

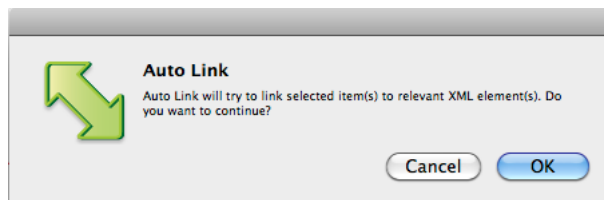
Automatic linking

To automatically link the dynamic items in the Illustrator document to the elements defined in the XML file, do the following:

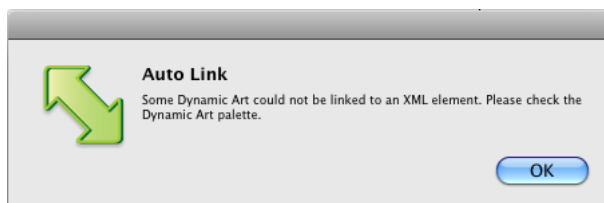
1. Choose **Window > Esko > Dynamic Content**.
The **Dynamic Content palette** appears.
2. Choose **Add XML...** from the fly-out menu of the Dynamic Content palette.
The **Open XML File** dialog box appears.
3. Browse to the XML file you want to link to the design.
4. Select the XML file and click **Open**.
The XML file is now linked to the Illustrator document, and the XML file appears in the **Dynamic Content palette**.
5. If the data in the XML file and the number and type of dynamic objects match, Illustrator will ask if you want to link all the dynamic items.
Click **OK** to start the auto link process.



6. Click **OK** again to start the auto link.



7. Illustrator will auto link as many items as it can. A status dialog may appear if some items could not be linked. Click **OK** to dismiss it.

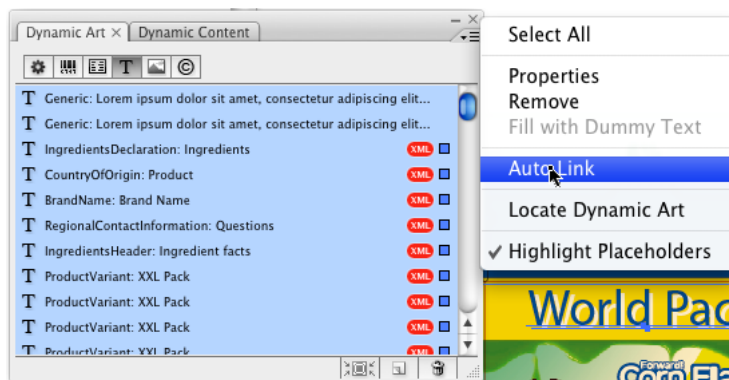


After the auto link completes, review the status in the Dynamic Art palette. Items successfully linked will have an XML label next to them. You will have to manually link those items that did not automatically link..

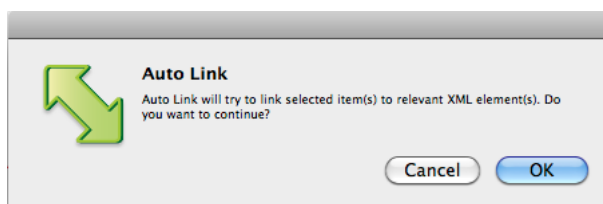
Resuming automatic linking

If you canceled an auto link, you can resume it by doing the following:

1. Select the text items to auto link to the XML file you have already added to the Illustrator document.
2. In the Dynamic Art palette's menu, click **Auto Link**.



3. Illustrator will ask you to confirm the auto link. Click **OK** to continue.



4. Illustrator will auto link as many items as it can. A status dialog may appear if some items could not be linked. Click **OK** to dismiss it.

After the auto link completes, review the status in the Dynamic Art palette. Items successfully linked will have an XML label next to them. You will have to manually link those items that did not automatically link.

Manual linking

To manually link the data in the XML file to the dynamic object placeholders, do the following:

1. Choose **Window > Esko > Dynamic Content**.
The **Dynamic Content palette** appears.
2. Choose **Add XML...** from the fly-out menu of the Dynamic Content palette.
The **Open XML File** dialog box appears.
3. Browse to the XML file you want to link to the design.
4. Select the XML file and click **Open**.
The XML file is now linked to the Illustrator document, and the XML file appears in the **Dynamic Content palette**.

Link XML Elements to Illustrator Objects

In this step, you link the XML elements from the source file to the individual Illustrator text objects, barcodes and nutrition tables in the design.

Before you can execute this task, you must have linked an XML file to the Illustrator design. This means that at least one XML file must show up in the Dynamic Content palette.


1. In the Dynamic Art palette, select the object you want to link to XML content: either click on the far right of the object's entry in the palette, or click **Select and zoom to object**.

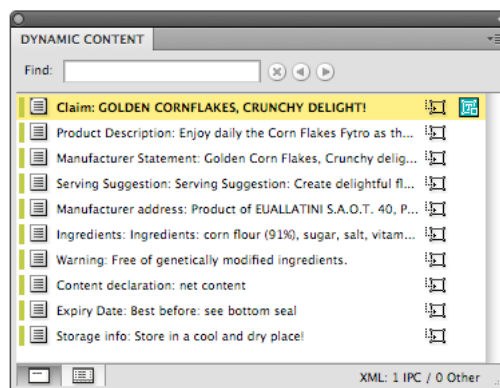
Depending on the type of XML file you linked to the Illustrator document, you can work either in Smart View or Advanced View. For GS1 and IPC XML files, the default is Smart View. Other XML flavors can only use the Advanced View. The steps below assume you are using the Smart View on an IPC XML file.

Depending on the type of object you selected in the **Dynamic Art** palette, the **Dynamic Content** palette now displays only those elements from the XML file that can be linked to your selected object.

2. In the **Dynamic Content** palette, click on the **Make Dynamic Object** icon  corresponding to the XML element that contains the text you want to replace in the Illustrator template.

Alternatively, you can use the keyboard shortcut `Shift+Alt+9` on Windows or `Shift+Command+9` on Mac OS to attach the element to the Illustrator object.

The object on the Illustrator canvas is now a dynamic object - its text contents are dynamically retrieved from the linked XML file. This is indicated in the Dynamic Content palette by the  status icon.



Linking XML Elements to Illustrator Objects in the Advanced View

In this step, you link the XML elements from the source file to the individual Illustrator text objects, barcodes and nutrition tables in the design.


Before you can execute this task, you must have linked an XML file to the Illustrator design. This means that at least one XML file must show up in the Dynamic Content palette.

Depending on the type of XML file you linked to the Illustrator document, you can work either in Smart View or Advanced View. For GS1 and IPC XML files, the default is Smart View. Other XML flavors can only use the Advanced View.


The steps below assume you are using the **Advanced View**.

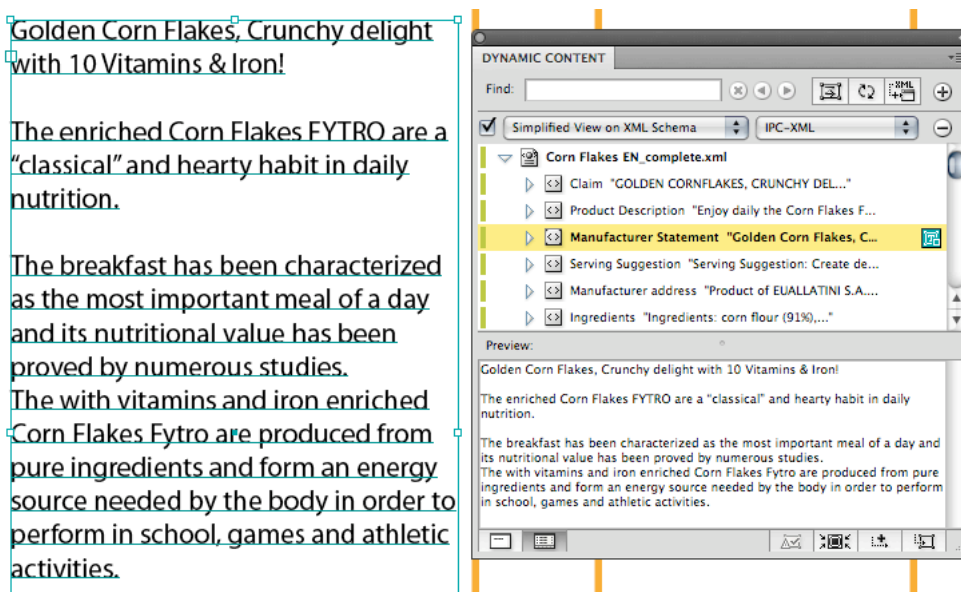
1. In the Dynamic Art palette, select the object you want to link to XML content: either click on the far right of the object entry in the palette, or click **Select and zoom to object**.
2. In the **Dynamic Content** palette, select the XML element that contains the text you want to replace in the Illustrator template.
3. Select the corresponding object in your Illustrator design.

Note: If you added the dummy objects to the **Dynamic Art** palette, the fastest way to work is to select the Dynamic Art object in the list in the **Dynamic Art** palette, and then click **Select and zoom to object**.

4. Click **Make Dynamic Object**  in the **Dynamic Content** palette.

Alternatively, you can use the keyboard shortcut **Shift+Alt+9** on Windows or **Shift+Command+9** on Mac OS to attach the element to the Illustrator object.

The Illustrator objects have been replaced with a Dynamic Object. Also, the status icon  appears in the XML tree indicating that the element has been attached to an object in the Illustrator document.



Highlighting the dynamic object

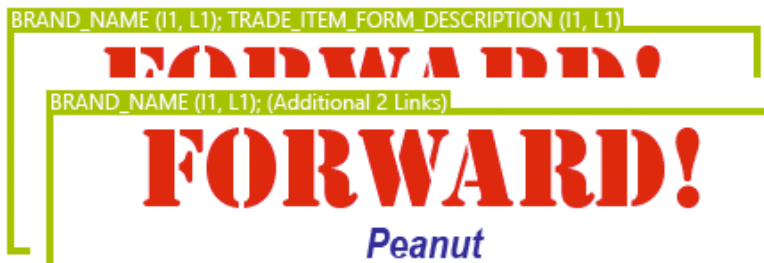
Using the option **Display Options > Highlight Dynamic Objects** from the fly-out menu, you can add a highlight frame to the dynamic object.

The color of the highlight frame depends on the XML source and is set in the XML Info dialog. See [Viewing XML Information](#) on page 60

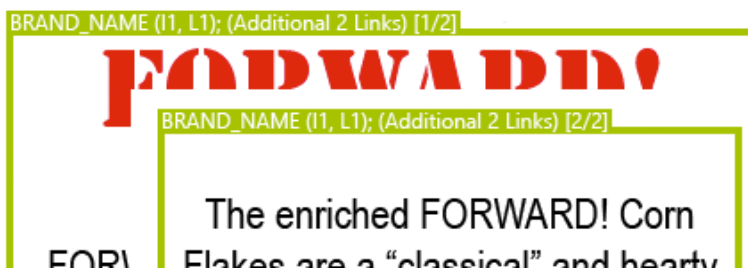
The highlight frame header shows the link source: the **Copy Element Name**, **Instance ID** and **Locale ID** in GS1 mode, or the **Copy Element Name** and **Locale** in IPC mode.



When the dynamic object contains two link sources, both are shown. In case it contains more than two, the first link is shown and the number of additional links is shown.



The highlight frame can also indicate if a dynamic object is split or threaded. Split text is indicated on the frame bottom (e.g. [1/2] and [2/2]), while threaded text is indicated on top, next to the link (see example underneath).




3.3.4. Step 3: Work with Changes in XML Content

Once the XML file has been linked to the Illustrator document, Dynamic Content will automatically notify you of any changes that are made to the contents of the XML file in external applications.

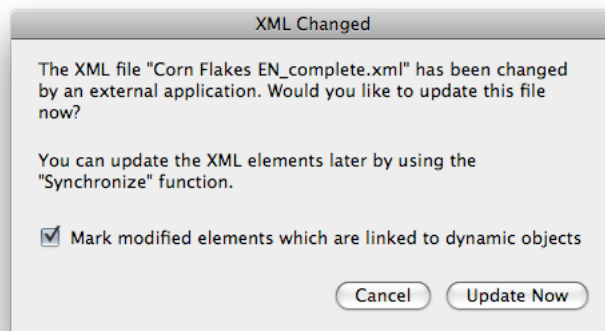
When changes in the XML file are detected, the **XML Changed** dialog box appears, and you will be given two options. You can either:


- Update the Illustrator document now; or

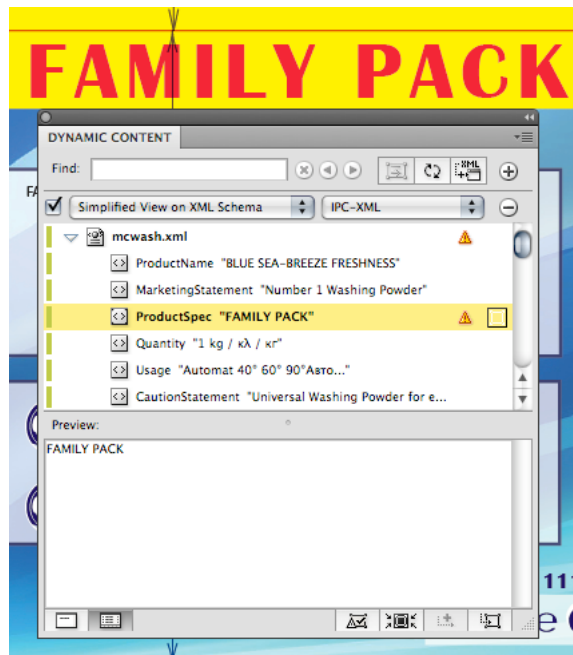
- Cancel the update, in which case you will have to deal with the changed content later. The XML Not Up to Date  status icon then appears next to the XML file in the XML Tree until you resolve the version difference.




Note: Following the instructions below, you will make manual changes to the XML content. In a real-world production scenario, the changes will of course be induced by the brand owner, for example by sending you a new version of the XML file.

1. Open the XML file you used earlier in a text or XML editor and change the text of the XML element you attached to Illustrator text.
2. Save the XML file.
Make sure that you overwrite the file that you linked to the Illustrator design.
3. Open the Illustrator design, or switch back to Illustrator if you still have it open.
The **XML Changed** dialog box appears.



4. Click **Update Now**.
The Dynamic Objects in the Illustrator document are updated to reflect the changes in the XML file.
The linked elements in which a change was detected are marked with a Check Alert .



5. Select the XML element in the tree that was changed and click **Zoom and Select Art**  in the Dynamic Content palette.
The corresponding Dynamic Object on the Illustrator artboard is now selected, the view centers on the object and Illustrator zooms into it.
6. Check whether the changes in content have caused any design problems such as text overflow or faulty text styling (highlighted by a special Check Alert ) , or other issues and correct them if necessary.
7. Click **Clear Check Alert**  to remove the Check Alert from the selected element, indicating that you have checked this update and that the design is once more error-free.

3.3.5. Creating Design Variants (Line Extensions)

A typical use case for the Dynamic Content plug-in in the packaging industry is creating variants of a design, sometimes called "line extensions".

For example, based on an original packaging design, you can create variants for different language groups, or for different sizes. To create a design variant:

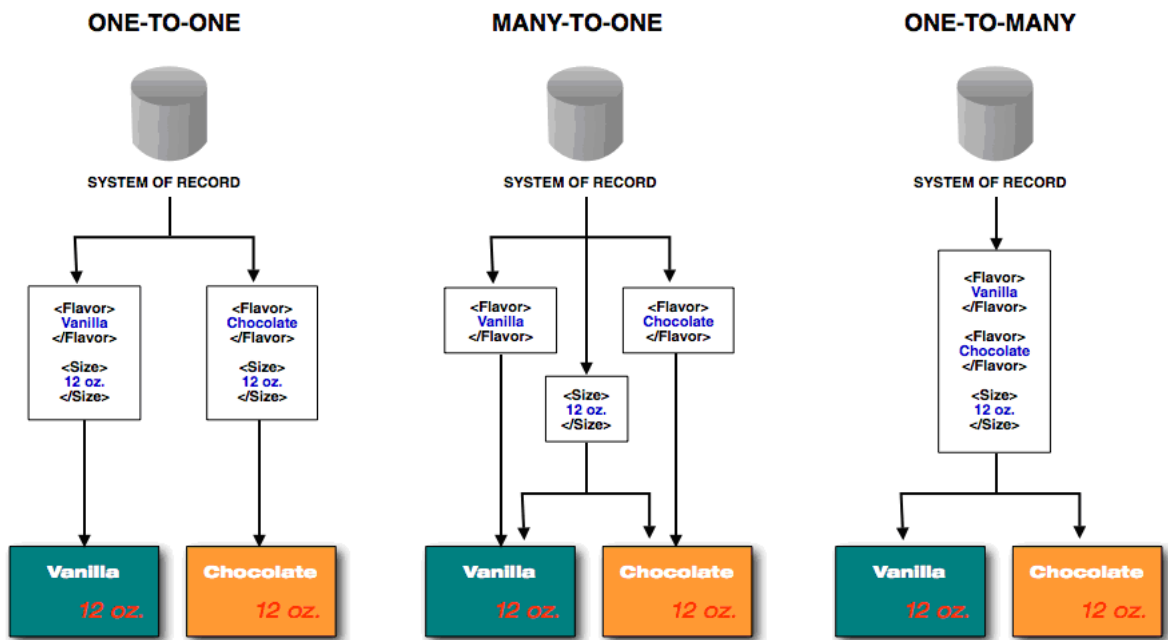
1. Create the base design by linking XML elements to the Illustrator objects using Dynamic Content.
2. Make a copy of the XML file you used in the original design and make any required changes in this copy.
For example, you could change the text of the element containing the package quantity (e.g. for a box of diapers, change the CopyElement "Quantity" from 36 to 72).
3. Re-link the new XML file, which has the same structure but different contents, to the Illustrator design.
4. Save the Illustrator file as a new design variant file.

Tip: You can copy and paste dynamic objects between different Illustrator files as long as you make sure that the same XML file is linked to them. After copying an object, you can use the Relink XML feature to link the copied content to the variant XML file.

XML Linking Strategies for Design Variants

There are three main linking strategies that you can use for working with design variants or line extensions: one XML file per stock keeping unit (SKU), multiple XML files for each SKU, and a single XML file for multiple SKUs.

Overview



The strategies in detail

Strategy	Description
One-to-one One XML file per SKU	Each design variant is linked to an external XML file that contains all the information. This is the least complex way to handle design variants, but it requires the brand owner to provide common data in each of the XML files (repetitions of the same data in different XML files).
Many-to-one Multiple XML files per SKU	At least two XML files are linked to every design variant: one file unique to that variant, and one file that contains all common elements. While this eliminates the duplication of data,

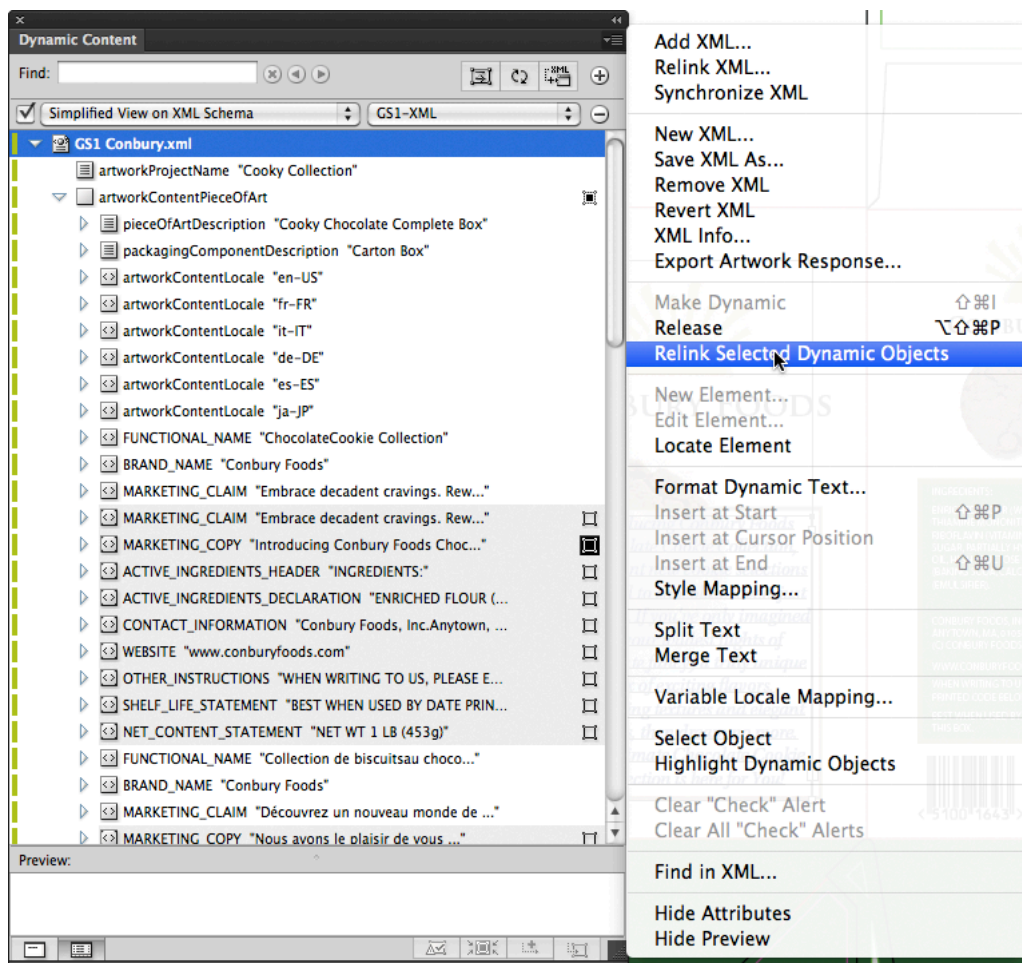
Strategy	Description
	this situation can potentially be difficult and confusing for operators to manage.
One-to-many One XML file for all SKUs	In this workflow, a single XML file would contain all information for all extensions of a line. The advantage here is that the common data is stored only once.

3.3.6. Relink text elements to different languages

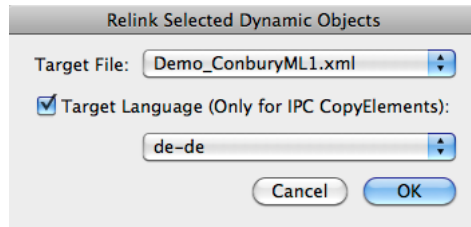
If you have a multilingual XML file, you can relink linked GS1 or IPC Copy elements to different languages contained in the XML content file.

To relink linked GS1 or IPC Copy elements, do the following:

1. Select one or more elements to relink.
2. On the fly-out menu of the Dynamic Content palette, choose **Relink Selected Dynamic Objects**.



3. In the **Relink Selected Dynamic Objects** dialog, select **Target Language** and choose the new language setting from the drop-down list. Only those languages available in the XML content file appear in the list.



4. Click **OK** to relink the elements.

The elements change to the language you specified.

3.4. Viewing XML Content in Dynamic Content

In this section you will learn how to interpret all the information displayed in the Dynamic Content palette, including how to manipulate an XML tree structure, what each of the icons and alerts means, and what the functions are of the buttons on the palette.

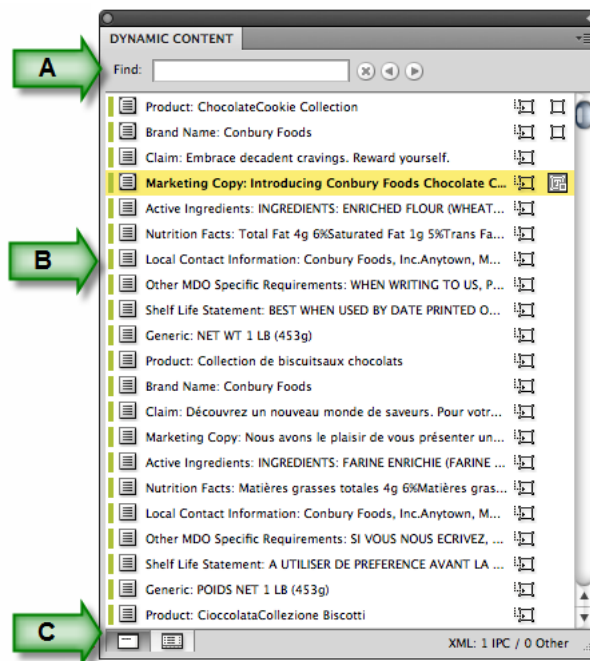
3.4.1. The Dynamic Content Palette

The main work area of Dynamic Content is the Dynamic Content palette. The palette contains information about the XML files that have been linked to the current Illustrator document. The Dynamic Content palette can operate in two view modes: **Smart View** and **Advanced View**. Much like any other Illustrator palette, Dynamic Content also has a fly-out menu.


Smart View

The Smart View of the Dynamic Content palette provides a simple-to-use view on the linked XML files. It hides much of the underlying XML and its complexity, and is ideal for quickly linking XML elements to placeholder objects.

Note: Smart View only works on GS1 and IPC XML files. When you add an IPC XML file to a document, Smart View is automatically enabled.



Components of the Smart View:

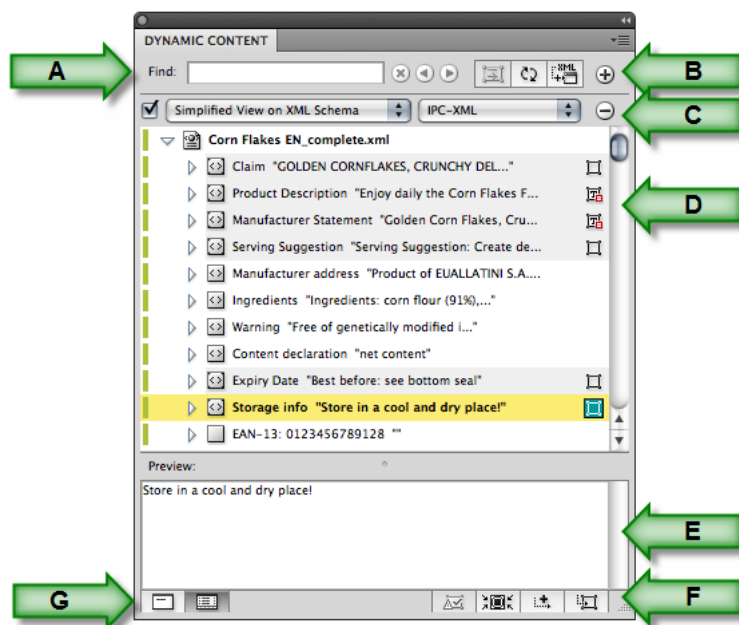
- **A. The Find** box, which works much like Spotlight on the Mac - simply type in (part of) a word to filter the list of elements “as you type”. Only the available XML files are searched and only matching elements are displayed. The Find function is case-insensitive. Click the **Reset Search**  button to remove the filter.
- **B. The Element List**, which displays the XML elements that can be linked to your current selection in the Illustrator document. If you have a text object selected, only CopyElements will be listed, but if you select a barcode created with Dynamic Barcodes, only the BarCode elements in the GS1 or IPC XML will be listed.
- **C. The View** buttons, which allow you to switch between Smart View and Advanced View.

Advanced View


The **Advanced View** of the Dynamic Content palette consists of two panes, surrounded by a top and bottom row of buttons. In the Advanced View, you can make full use of the advanced features of Dynamic Content, and work with any type of XML.

Two panes

For ease of reference, the top pane is called the **XML Tree** and displays the structure of the XML file. The **Preview** pane at the bottom can be hidden if desired, and resized to fit more or fewer XML content.



Components of the palette

- **A.** The **Find** box, which works much like Spotlight on the Mac - simply type in (part of) a word to filter the list of elements “as you type”. In Advanced View, this searches case-insensitively in every element in all available XML files. All the elements are displayed; use the **Next** and **Previous** buttons to jump between matching elements. Click the **Reset Search**  button to remove the filter.
- **B.** The top toolbar, which offers quick access to the **Reflow Text**, **Synchronize**, **Add XML** and **Add Filter** commands.
- **C.** The Filter toolbar, which allows you to filter the content displayed in the XML Tree pane.
- **D.** The **XML Tree**, which displays the content found in the linked XML file(s).
- **E.** The **Preview** pane, which displays the text content of the selected element in the XML Tree.
- **F.** The bottom toolbar, which offers quick access to the **Clear Check Alert**, **Select and Zoom to Dynamic Object**, **Insert Element in Dynamic Object** and **Make Dynamic Object** commands.
- **G.** The **View** buttons, which allow you to switch between Smart View and Advanced View.

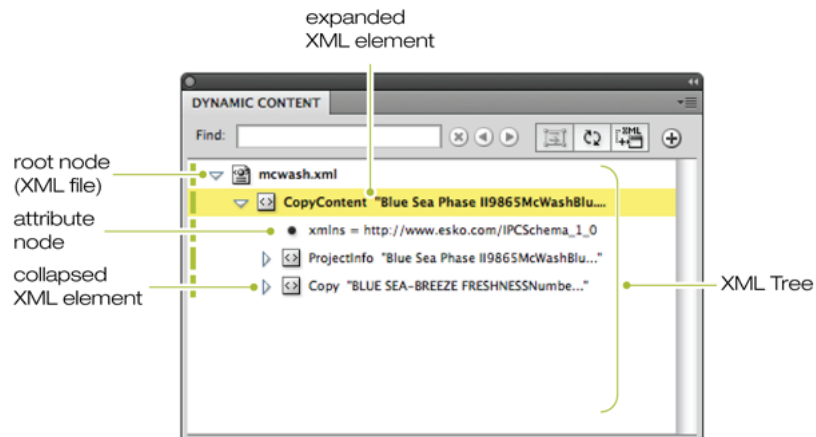
Understanding the XML Tree

The XML tree pane contains a view on the internal structure of the linked XML file(s). Every node in the file (including elements and attributes) is visualized in the XML tree as an entry that can be expanded or collapsed.

Which nodes are displayed?

The XML tree displays:

- the XML file(s) linked to the Illustrator design, as the root node(s) in the XML tree;
- the XML elements in each XML file, as expandable entries under the root node (XML file);
- any XML attributes for every XML element, preceded by a “bullet” symbol. Attributes can be hidden from the XML Tree to simplify the view by choosing **Hide Attributes** from the fly-out menu.



Note:

The structure displayed in the XML tree can be simplified by applying one or more filters. See [Filter options for the XML tree](#) for more information.

Icons in the XML Tree

The XML tree displays different types of objects: one or more linked XML files, as well as the XML elements, XML attributes, and XML text elements that these files contain. Each of these objects is represented by an entry in the tree structure, and each type of object has its own icon.

Table: XML tree icons

The following table lists all the icons displayed in the XML tree structure view of the Dynamic Content palette.






Icon	Description
	XML file; not changed in Dynamic Content / changed in Dynamic Content
	Read-only XML file; not changed in Dynamic Content / changed in Dynamic Content
	XML node element containing text inside; placed (linked) / not placed
	XML node element directly containing text; placed (linked) / not placed
	XML node element, which contains no text inside
	XML attribute
	XML text element (has no icon)

Element Status Icons

The elements in the XML tree can be marked with one or more status icons, that show whether the content has been changed inside Dynamic Content, or externally in the XML file. The icons are displayed on the right side of the elements themselves, and in two columns: primary and secondary icons.










Table: Primary status icons

The following table lists all the status indicator icons displayed in the XML tree structure view:

Icon	Description
	<p>The contents of this XML element have been changed in the source XML file.</p> <p>Note:</p> <p>When at least one XML element in the file is marked with this status icon, the icon also appears next to the XML file name in the Dynamic Content palette.</p>
	<p>The contents of this XML element have been changed in the source XML file to such an extent that some text styling or additional formatting that was applied by the user (e.g. color, size, font, soft returns, hyphens or spaces) could not be retained.</p> <p>Note:</p> <p>When at least one XML element in the file is marked with this status icon, the icon also appears next to the XML file name in the Dynamic Content palette.</p>
	<p>The contents of this element have been changed in the Dynamic Content plug-in. This status icon disappears when you save or close the XML file.</p> <p>Note:</p> <p>When at least one XML element in the file is marked with this status icon, the icon also appears next to the XML file name in the Dynamic Content palette.</p>
	<p>The element has a complex status, combining two types of changes:</p> <ul style="list-style-type: none"> • The contents of this XML element have been changed in the source XML file. • The contents of this element have been changed in the Dynamic Content plug-in. This status icon disappears when you save or close the XML file.
	<p>The element has a complex status, combining two types of changes:</p> <ul style="list-style-type: none"> • The contents of this XML element have been changed in the source XML file to such an extent that some text styling or additional formatting that was applied by the user (e.g. color, size, font, soft returns, hyphens or spaces) could not be retained.

Icon	Description
	<ul style="list-style-type: none"> The contents of this element have been changed in the Dynamic Content plugin. This status icon disappears when you save or close the XML file.

Table: Secondary status icons

Icon	Description
	The XML file was changed externally and has not yet been synchronized with the document.
	The XML element itself is not linked, but at least one of its child elements is. Click to select all objects linked to children.
	The XML element is linked to a Dynamic Object. Click to select linked object, Alt+Click to select and zoom.
	The XML element is linked to a Dynamic Object and the attached text object has text overflow. Click to select linked object, Alt+Click to select and zoom.
	The XML element is linked to a Dynamic Object and the object is selected. The background color corresponds to the selection color of the corresponding layer. Alt+Click to zoom.
	The same as above and the object has text overflow. Alt+Click to zoom.
 	The XML element is linked / not linked and has at least one child which is linked and selected.
	The same as above and the object has text overflow.

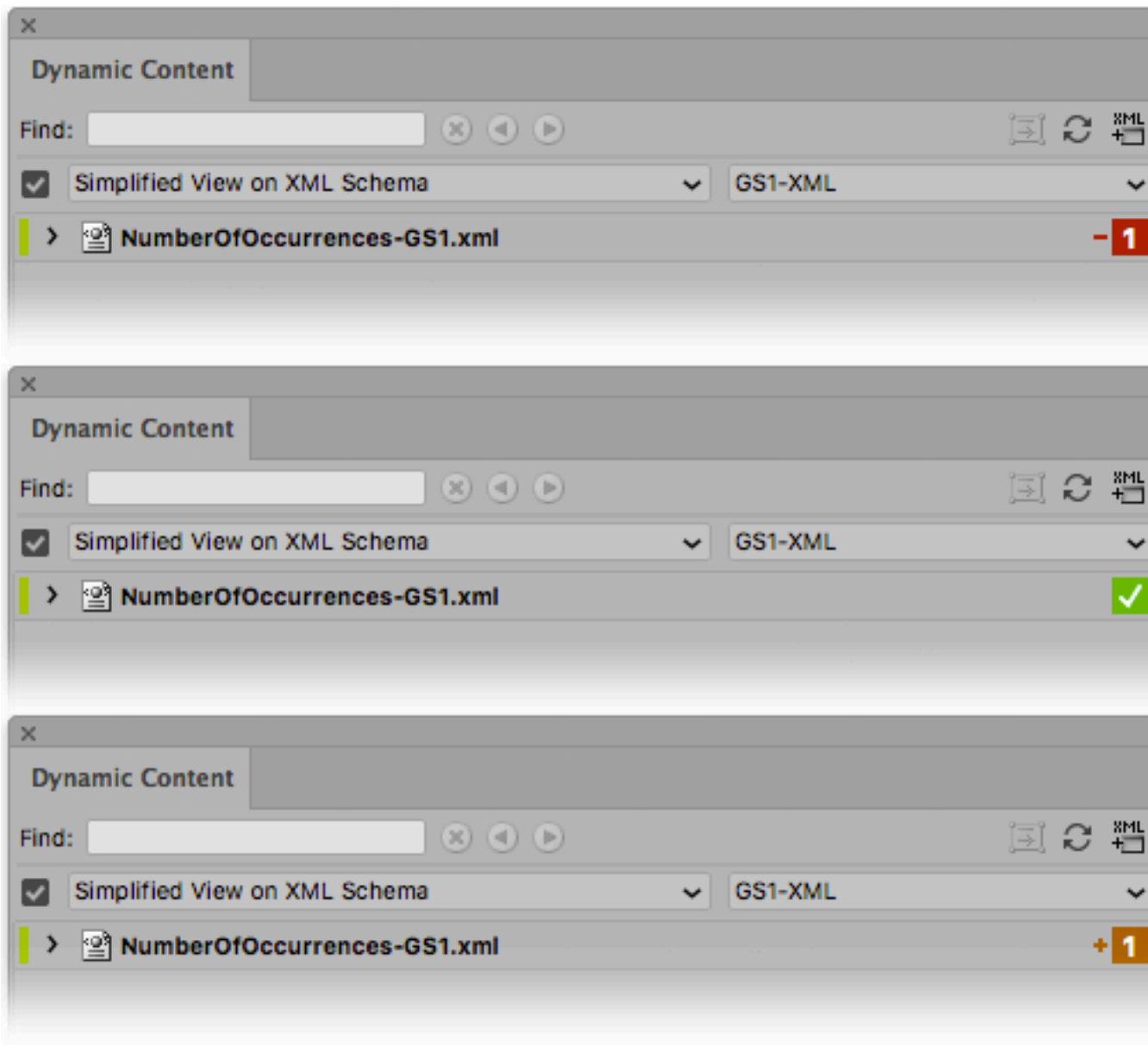
Indication of the number of occurrences

In a GS1 XML file, elements can contain the element "expectedNumberOfOccurrences", which indicates how many times a particular unique element (identified by the Copy Element Type, Locale ID and Instance ID) should occur in the artwork.

The Advanced View gives an indication of the number of occurrences. It will show the difference between the expected number of occurrences and the actual amount, or a check if these numbers are the same. If the **Show nominal values for the number of occurrences** option is enabled in the Dynamic Content Preferences, the actual number is shown instead. See [Dynamic Content Preferences](#) on page 94

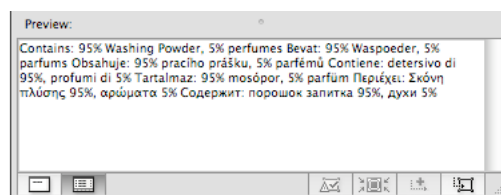
Next to the number, a color code is used as well:

- If the actual number is lower than the expected number, the number is shown in red.
- If the actual number is the same as the expected number, the number is shown in green.
- If the actual number is higher than the expected number, the number is shown in orange.



The Preview Pane

At the bottom of the Dynamic Content palette is the Preview pane. The Preview pane displays the content of the element that is selected in the XML Tree, including the text of all its child elements.



Technically speaking, the Preview pane shows the concatenation of all text in the sub tree rooted at the XML element that is currently selected.

The text that is displayed can be used for standard copy and paste purposes, but this pane is not designed for editing.

Its function is mainly to help the user to link the appropriate XML elements to text objects in the Illustrator design.

Note:

To hide or display the Preview pane, choose **Hide/Show Preview** in the fly-out menu.

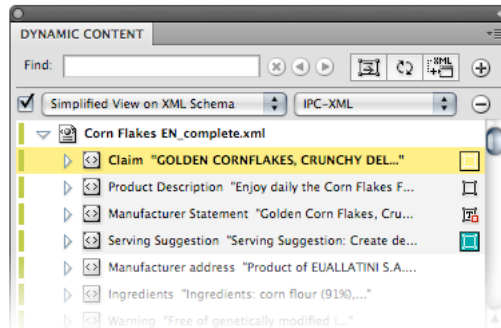
Drag the border between the XML Tree and the Preview pane up or down to resize the Preview pane.

The Fly-out Menu

The Dynamic Content palette has a fly-out menu which offers access to a variety of commands. The commands you will use most often are also directly accessible from the palette buttons to speed up your daily work.

Accessing the fly-out menu

To open the fly-out menu, click the expand icon in the upper right hand corner of the Dynamic Content palette.



Fly-out Menu Command Reference

This topic lists all the commands on Dynamic Content's fly-out menu, along with a brief description of their functions.

Command	Description
<p>Add XML</p>	<p>Adds a new XML file in the Dynamic Content palette.</p> <p>Note:</p> <p>You can add multiple XML files to a single Illustrator document to combine elements from all different XML files in a single design.</p>

Command	Description
Add XML from WebCenter...	<p>If the Webcenter Connector plug-in is available, this option will open its dialog to browse for the XML content within WebCenter projects.</p> <p>If the CHILI Plug-in is available, it will allow to browse for CHILI Publisher related files on WebCenter. The selected file is added, and works as any other linked XML.</p>
Relink XML...	<p>Replaces an existing XML file link by a new one.</p> <p>Note: This operation cannot be undone.</p>
Relink XML from WebCenter	<p>If the WebCenter Connector plug-in is available, this command, similar to Relink XML, replaces the selected XML file, but browses WebCenter projects instead of local files. In addition, if the CHILI Plug-in is available, it allows to browse for CHILI Publisher-related files on WebCenter.</p>
Remove XML	<p>Removes the selected XML file from the Dynamic Content palette. Dynamic Objects that refer to XML elements in a file that is removed will be converted to regular Illustrator text objects.</p> <p>Note: This operation cannot be undone.</p>
XML Source > New XML...	<p>Creates a new XML file according to the GS1 or IPC XML schema. The XML file's format depends on the settings in the Preferences. See Dynamic Content Preferences on page 94</p>
XML Source > New Element...New Element...	<p>Appends the text of the selected Illustrator text object(s) to the current XML file as an XML element in the GS1 or IPC format, according to the settings in the Preferences.</p>
XML Source > Edit Element...	<p>Opens a basic XML editor in which you can edit the contents of the selected XML element. The editor displays all the text inside the selected XML elements: all child elements in the tree structure are included and editable.</p>
XML Source > Save XML As...	<p>Saves the current XML to a new file according to the GS1 or IPC XML schema. The XML file's format depends on the settings in the Preferences. See Dynamic Content Preferences on page 94</p>
XML Source > Revert XML	<p>Replaces the contents of the selected XML file in Dynamic Content by the current version on disk, i.e. this clears all changes made inside Dynamic Content.</p>

Command	Description
<p>Export Artwork Response...</p>	<p>This works only with GS1 or IPC XML files.</p> <p>Exports the selected XML file as a report file that can be used for electronic verification of the linked state of the content by the content creator. The exported XML file has the same structure and content as the original GS1 or IPC XML file and will add, in the case of the IPC standard, a "LinkedState" attribute to each CopyElement, Barcode and NutritionFacts element that occurs in the IPC-XML file.</p> <p>The value of the attribute will be set as follows:</p> <p>"LinkedToArtwork": Indicates that the CopyElement, Barcode or NutritionFacts element is linked to a text, barcode or table object in the artwork.</p> <p>"NotLinkedToArtwork": Indicates that the CopyElement, Barcode or NutritionFacts element is not linked to any text, barcode or table object in the artwork.</p> <p>In the case of GS1 file will export the "BMS Artwork Content Response" XML file. The file is based on the GS1 BMS standard (see http://www.gs1.org/gsmp/kc/ecom/xml/).</p> <p>The file indicates e.g. :</p> <ul style="list-style-type: none"> • by the changedByRecipient tag by the linked element can show whether the content of the element was changed inside the Dynamic Content plug-in • the actualNumberOfOccurrences element informs about the number of really placed instances of the same content (the intended number is indicated by the expectedNumberOfOccurrences element of the source file)
<p>Variable Locale Mapping...</p>	<p>Allows editing the mapping of Locale variables, set in the artwork template previously by the Dynamic Art plug-in. Here is possible to map the Locale variables to the actual locales valid for the current document and remove existing mapping. This is only applicable for IPC XML standard.</p>
<p>Synchronize XML</p>	<p>Synchronizes all the external XML files with the corresponding content used in Dynamic Content. Note that the synchronization works in both directions: import modifications to external XML files and export changes done using "Edit Element" in Dynamic Content back to the external XML files. In case there would be conflicts, the user will be prompted to choose the behavior.</p>
<p>XML Info...</p>	<p>Displays the XML Information dialog box, which shows basic information on the selected XML file, and allows you to make the XML file "Read Only".</p>

Command	Description
Make Dynamic	Replaces the contents in the selected Illustrator object with the contents of the selected XML element, creating a Dynamic Object.
Release	Converts the selected Dynamic Object(s) into a regular Illustrator text object(s). Note that this permanently removes the link to the XML content.
Release and Convert	Converts the selected Dynamic Object(s) into a Dynamic Art placeholder. The original Dynamic Content link information is transformed to Dynamic Art link information. Note that this permanently removes the link to the XML content.
Relink Selected Dynamic Objects	<p>Relink Selected Dynamic Objects operates on all selected dynamic objects that are already linked to XML file A and will attempt to re-link all of these objects to selected XML file B. Select both the linked objects to re-link (in the Illustrator document window) and the target XML file to re-link these objects to (in the Dynamic Content palette). For each of the selected objects, the function will attempt to find the corresponding element to re-link to in the target XML file. In case an appropriate new XML element can be found for each of the selected objects, then they will all be re-linked to the new XML file. This function may be useful when creating line-extensions or design variants based on content provided in different XML files. Objects that are linked to XML elements in the content file for the first variant (e.g. strawberry.xml) can then be re-linked to the content file for another variant (e.g. banana.xml).</p> <p>Relink Selected Dynamic Objects also allows you to change the language of a linked dynamic object if you are working with a multilingual GS1 or IPC XML content file. See Relink text elements to different languages on page 46 for more information.</p>
Format Dynamic Text	Displays the Dynamic Object Properties dialog box, which allows you to fine-tune how multiple elements in a single Dynamic Object are formatted.
Style Mapping...	Opens the Style Mapping dialog box, in which you can assign named character and or paragraph styles to selected XML elements. It also allows you to specify which XML tags should be interpreted as paragraphs (i.e. will be followed by a "hard return").
Dynamic Text > Insert at Start	Inserts the contents of the selected XML element at the top of the Dynamic Object in the Illustrator design.
Dynamic Text > Insert at Cursor Position	Inserts the contents of the selected XML element at the place of the text cursor within the Dynamic Object in the Illustrator design. If the cursor is located inside the word, the content is inserted in the closest space to avoid splitting words.





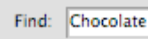


Command	Description
Dynamic Text > Insert at End	Appends the contents of the selected XML element at the end of the Dynamic Object in the Illustrator design.
Split Text	Splits the contents of a XML element into multiple text objects. Click inside the initial linked text object at the desired split position and then click Split Text . The result will be two text objects linked to the same XML element but each will contain only part of the element. If the XML changes, Dynamic Content will try to maintain the split at its original position, but if the content is significantly different, you may need to merge the text elements and split them again.
Merge Text	Merges previously-split dynamic text items back together. Click inside one of them and click Merge Text on the Dynamic Content palette's fly-out menu.
Locate > Locate Element	Locates the XML element associated with the selected Dynamic Object in the Dynamic Content palette. If the XML tree structure was collapsed, it is now expanded in order to reveal the associated XML element.
Locate > Select Object	Selects the Dynamic Object(s) on the Illustrator artboard that are attached to the selected XML element.
Locate > Find in XML...	Displays the Find dialog box, in which you can search the text content of the linked XML file.
Clear "Check" Alert	Removes the Check Alert from the current element. When the contents of the external XML file change, the changes are indicated in Dynamic Content by Check Alerts.
Clear All "Check" Alerts	Removes the Check Alerts for all XML elements in the XML file.
Display Options > Highlight Dynamic Objects	Highlights all Dynamic Objects in the Illustrator document.
Display Options > Hide/Show Attributes	Displays or hides the XML attributes of the elements in the Dynamic Content palette.
Display Options > Hide/Show Preview	Displays or hides the Preview pane in the Dynamic Content palette.

The Toolbars: Button Reference

The buttons on the Dynamic Content toolbars (in Advanced View) allow you to quickly execute the most common operations in a Dynamic Content workflow. This section details each of the buttons on the two toolbars and their functions.


Top toolbar




Table: Buttons on the top toolbar

Button	Description
	<p>Add XML File.</p> <p>Adds a new XML file in the Dynamic Content palette.</p>
	<p>Reflow Text</p> <p>Enables the Reflow Text mode, which allows you to transform (scale, rotate, etc.) the Dynamic Object without deforming the text.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p> Caution:</p> <p>Take care when using this mode. It should be turned off as soon as you finish transforming the Dynamic Object with Illustrator’s tools. While this mode is enabled, a number of essential Dynamic Content features will not work on this object .</p> </div>
	<p>Synchronize</p> <p>Synchronizes all the external XML files with the corresponding content used in Dynamic Content. Note that the synchronization works in both directions: import modifications to external XML files and export changes done using "Edit Element" in Dynamic Content back to the external XML files. In case there would be conflicts, the user will be prompted to choose the behavior.</p>
	<p>Find</p> <p>In Advanced View, enables you to find a piece of text in the XML file. For example, typing "chocolate" will list all copyelements that have "chocolate" in the XML text in all available XML files. In Smart View, it searches only the content currently available in the Smart View window of the palette.</p>
	<p>Add Filter</p> <p>Adds a new view filter to the Dynamic Content palette.</p>
	<p>Remove Filter</p> <p>Removes the corresponding filter from the Dynamic Content palette.</p>

Bottom toolbar

Table: Buttons on the bottom toolbar

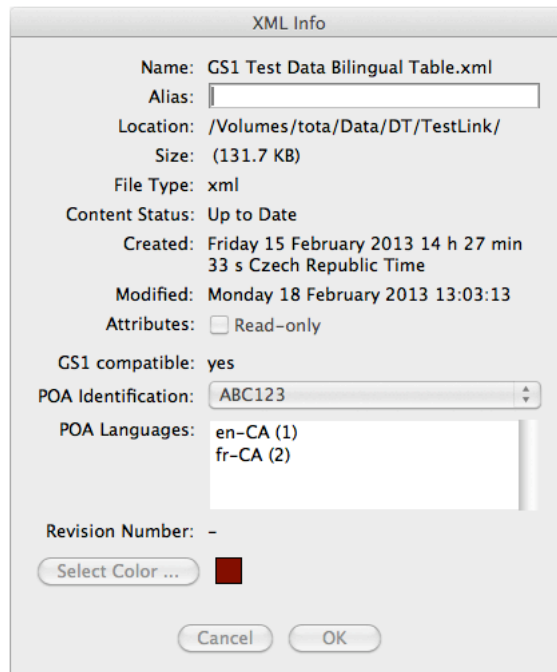
Button	Description
	<p>Clear Check Alert. Depending on the current selection, this button:</p>

Button	Description
	<ul style="list-style-type: none"> Removes the Check Alert from the current element. When the contents of the external XML file change, the changes are indicated in Dynamic Content by Check Alerts. Removes the Check Alerts for all XML elements in the XML file.
	<p>Select and Zoom to Dynamic Object. This button:</p> <ul style="list-style-type: none"> Selects the Dynamic Object(s) on the Illustrator artboard that are attached to the selected XML element. Zooms to the selected Dynamic Objects on the artboard.
	<p>Insert Element in Dynamic Object. Inserts the contents of the selected element in the XML tree into the selected Dynamic Object on the artboard. The content of the current element is appended at the end of the Dynamic Object.</p> <p>Tip: To insert an element at the top of a Dynamic Object, use the Insert at Start command in the fly-out menu or Alt+Click this button.</p>
	<p>Replaces the contents in the selected Illustrator object with the contents of the selected XML element, creating a Dynamic Object.</p> <p>Note: If an Illustrator text object contains multiple styles (fonts, text sizes, ...) Dynamic Content will only retain the formatting of the last style found in the text object.</p>

3.4.2. Viewing XML Information

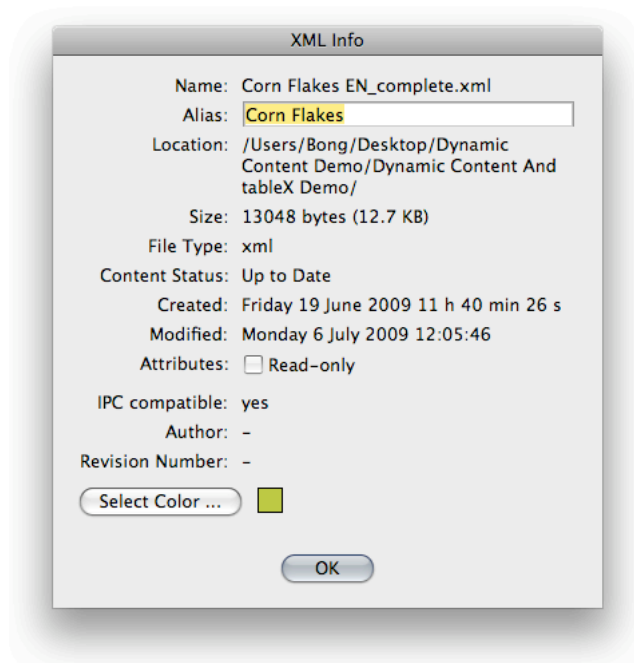
You can use the **XML Info...** fly-out menu command to view essential characteristics of the selected XML file in the XML tree.

- The XML Information dialog box displays the file **Size**, **Location** on disk, **Created** and **Modified** date, and similar basic information about the XML file.
- In addition, it also lists the current **Content Status**, which informs you about the relationship between the text in the XML file and the linked text in your Illustrator design.
- The XML info shows whether the XML file is taken as a file conforming to any of the supported standards (GS1 or IPC). This can be important for other productivity enhancers of the Dynamic Content plug-in, e.g. for Automatic Linking.
- You also can set the highlight color by clicking Select Color.




- You can use the XML Information dialog box to make the XML file read-only on disk.
 - Finally, you can use the **Select Color** button to change the color used to highlight elements from this particular XML file (both in the XML Tree and on the Illustrator canvas).
1. Select an XML file in the XML tree.
 2. Do one of the following:
 - choose **XML Info...** from the fly-out menu of the Dynamic Content palette.
 - double-click the XML file node in the XML tree.

The XML Information dialog box appears.

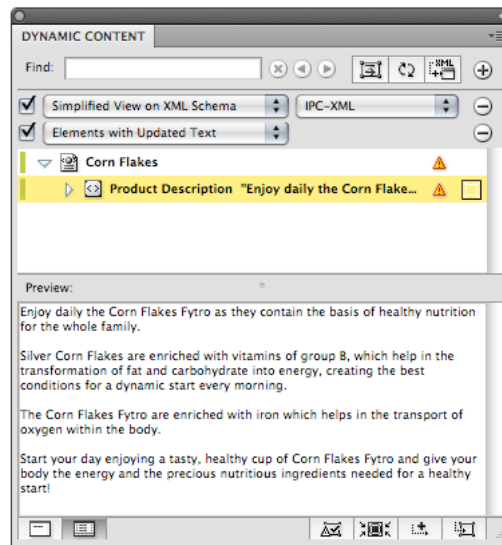


3.4.3. Filter Options for the XML Tree

The **Add Filter** button  on the Dynamic Content palette allows you to filter the list of elements that are displayed in the XML tree. You can choose to use a standard, built-in filter, or create your own filter based on an element name, an attribute name, or an attribute value.

Example: combining multiple filters

The following example of a filter shows only those elements that have been updated in the source XML file. In addition, it does this in a simplified view based on the IPC schema.



Tip:

This filter can function as a "to-do" list of elements that need to be checked as a result of an update of one or more external XML files.


Applying a Filter to the XML Tree

You can create a filter to display only those elements in the linked XML files(s) that are of interest to you. Dynamic Content's filter option also allows you to simplify what is displayed in the XML tree based on a combination of multiple filters.

Multiple filters work in a cumulative manner, using an "AND" logic.

Note:



When combining filters, keep in mind the cumulative effect. For example, applying a filter based on the Element Name "CopyContent" and then adding another Element Name filter "CopyElement" will display an empty palette (because there can be no elements that have both the names "CopyContent" and "CopyElement" at the same time).

1. Create a character style in Adobe Illustrator and map it to text objects, then select one or more text objects.
2. On the top toolbar of the Dynamic Content palette, click  **Add Filter**.
The filter options appear on the palette, just below the top toolbar.
3. Select a filter type from the **Filter Type** list.
For detailed descriptions of the filter types, see [Filter Options in Detail](#).
4. Do one of the following:
 - If you selected the Element Name or Attribute Name filter type, choose an Element or Attribute Name from the Filter list.

- If you selected the Attribute Value Contains filter type, enter one or more attribute values in the Filter box.

The XML tree is filtered according to your criteria.

5. If necessary, proceed by adding or removing additional filters. You can:

- click  **Add Filter** to add another filter.
- click  **Remove Filter** to remove a filter.
- switch each filter on or off by (de)selecting the check box preceding it.

Filter Options in Detail

A number of filter types can be activated and combined. This topic describes the details of each filter type.

The filter type...	Applies the following filter...
Simplified View on XML Schema	Filters the XML tree based on the standard GS1 or IPC XML format. This will display only the CopyElement elements that contain the actual text that will be used in your design.
Element Name	Filters the XML tree to display only elements matching the name you select from the Filter details list.
Attribute Name	Filters the XML tree to display only elements with attributes matching the attribute name you select from the Filter details list.
Attribute Value Contains	Filters the XML tree to display only elements that have an attribute whose value matches the text you enter in the Filter details box. Multiple keywords can be entered using the following format: "keyword1", "keyword2", "keyword3" Example: Entering "en-us", "en-uk" will display only those elements that have at least one attribute with a value containing the strings "en-us" or "en-uk".
Used Elements	Filters the XML tree to display only elements that have been linked to Illustrator text objects.
Unused Elements	Filters the XML tree to display only elements that have not yet been linked to Illustrator text objects.
Elements with Updated Text	Filters the XML tree to display only elements that have been modified in the source XML file.

The filter type...	Applies the following filter...
	<p>Tip:</p> <p>This filter can function as a "to-do" list of elements that need to be checked as a result of an update of one or more external XML files.</p>
Elements with Text Overflow	<p>Filters the XML tree to display only elements that have been modified in the source XML file to such an extent that it has caused text overflow in the Illustrator design.</p>
Elements with Text	<p>Removes any element that does not contain any text element in its sub-tree. This filter hides any elements in the XML file purely for structural reasons which do not contain any text appearing in the artwork.</p>
Not Synchronized Elements	<p>Filters the XML tree to display only those linked barcode / image / table elements which couldn't be regenerated due to a data error, for example an incorrect check digit in the barcode code.</p>
GS1 Instance ID	<p>Filters the XML tree to display only elements with the GS1 instanceSequence matching the value you select from the Filter detail list. The list contains only instanceIDs present in the GS1 XML files(s) actually loaded. Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p>
GS1 Locale	<p>Filters the XML tree to display only elements with the GS1 localeSequence matching the value you select from the Filter detail list. The list contains only locales present in the GS1 XML files(s) actually loaded. The localeSequence numbers are translated using the Artwork Content Locale mapping present in the GS1 XML file(s). Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p>
GS1 Element Type	<p>Filters the XML tree to display only elements of the type you select from the Filter detail list. The possible values are Copy Element for text content, Data Carrier used usually for barcodes, Graphic Element for images and symbols and Structured Copy Element used usually for Nutrition tables. Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p>
GS1 Approved	<p>Filters the XML tree to display only elements with the GS1 Approved status matching the value you selected from the Filter detail list. The values</p>

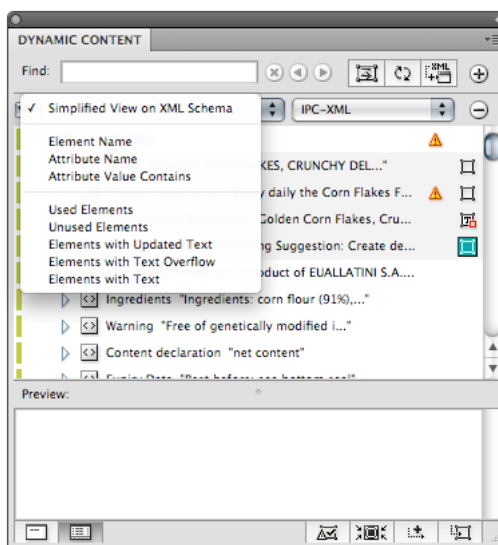
The filter type...	Applies the following filter...
<p>GS1 For Placement Only</p>	<p>are True and False. Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p> <p>Filters the XML tree to display only elements with the GS1 forPlacementOnly status matching the value you selected from the Filter detail list. The values are True and False. Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p>
<p>GS1 Element With Notes</p>	<p>Filters the XML tree to display only elements with any content in the 'Notes' tag. Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p>
<p>GS1 Element Type Code Contains</p>	<p>Filters the XML tree to display only elements with the GS1 <structuredCopyElementTypeCode> tag matching the value you enter to the filter's detail. Example: If you enter "brand", the list will contain 'BRAND_NAME' and 'SUB_BRAND_NAME' elements only. Use in combination with 'Simplified View On GS1-XML Schema' filter only.</p>

3.4.4. Manipulating the XML Tree

Once you have linked an XML file into the Dynamic Content palette of your Illustrator document, you can use the XML tree in the palette to navigate and even edit the contents of the XML file.

Proceed as follows to view and manipulate the XML tree.

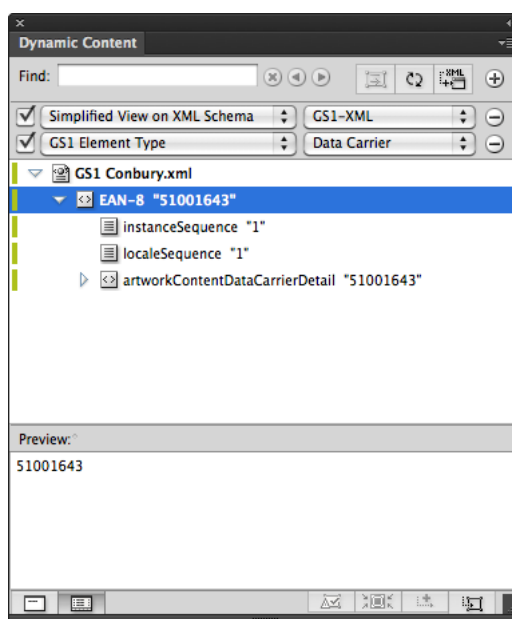
1. In the Dynamic Content palette, click the arrow preceding the topmost XML element.
This is the root element in your file.
The XML tree expands one level down the hierarchy, and the elements in your XML file become visible.
2. Click the **Add filter** button.
The Filter list appears.



3. Select an option from the **Filter** list.

For example, you can select the Simplified View on XML Schema / IPC-XML filter type to view only the text contents of an IPC XML file.

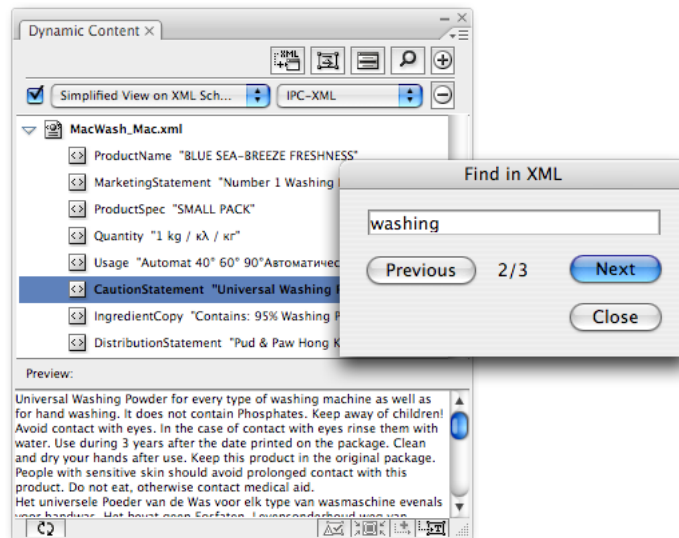
The list of XML elements in the palette is filtered to match your criteria.



4. Click the **Find** button to open the Find dialog box.

5. Enter a search term in the **Find** dialog box and click Next.

The first XML element matching your search term is selected in the XML tree. The Find dialog box shows how many more occurrences of the search term were found in the linked XML file(s).



Also, note that the text of the selected element is now displayed in the Preview pane of the Dynamic Content palette.

You have performed some basic operations on the XML tree that will help you speed up your work in Dynamic Content: navigating the tree structure, filtering the list of elements, and searching for text in the XML files are all very common operations.

3.5. Managing Changes to the XML Content

One of the main reasons for using Dynamic Content is that it allows you to deal with changes in textual content of your designs more efficiently and more quickly. This section examines how you manage changes to the XML content of your designs using Dynamic Content.

The changes in your design can be of two types:

- the external XML file can change, for example if the brand owner sends you a new version of the copy content and you want to update your design accordingly; or
- you can manually edit the copy content in Illustrator, and apply those changes to the external XML file.


In short, changes can be applied in both directions: XML to Illustrator, or Illustrator to XML.

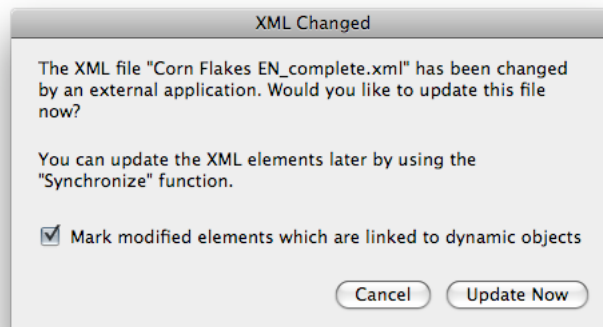
3.5.1. How Dynamic Content Deals with Changes

As soon as the content of the linked XML file(s) is changed, Dynamic Content will warn you of these changes. If you did not have the Illustrator design open at the time of the changes, you will be notified the next time you open the file. This behavior is governed by the **Always Mark and Update Changed Dynamic Objects Without Asking** option in the Preferences dialog.


Changes in the XML file

When changes in the XML file are detected, the **XML Changed** dialog box appears, and you will be given two options. You can either:

- Update the Illustrator document now; or
- Cancel the update, in which case you will have to deal with the changed content later. The XML Not Up to Date  status icon then appears next to the XML file in the XML Tree until you resolve the version difference.





If you do click Update Now, the text inside any Dynamic Objects is updated with the new XML content.

Every element that experiences these changes is marked with a  Check Alert in the XML tree.

Changes inside Dynamic Content

You can also make changes to the XML content inside Illustrator by using the **Edit Element** command on the Dynamic Content fly-out menu.


Any changes you make in Illustrator using Dynamic Content are not automatically applied to the source XML document. Instead, they are marked in the XML tree with the  status icon so you have the chance to review these changes before applying them to the linked XML file using the  Synchronize command.

3.5.2. Approving Changes in the External XML File


To approve changed content, you have to review the Dynamic Objects that have undergone content changes.

1. Open the Illustrator file for which one or more of the linked XML files have been modified externally. Once the Illustrator document opens, the **XML Changed** dialog box appears.
2. Click **Update Now** to apply the changes to the Illustrator document.


Any Dynamic Objects that are linked to XML elements that have been changed in the XML file are automatically updated to match the new XML content.


Every XML element that has been modified is marked with a  Check Alert in the XML tree.

Note:

Elements that have been modified to such an extent that one or more Dynamic Objects have lost formatting are marked with a different  Check Alert. These elements will require your special attention to solve formatting issues in your final design.

3. Review each of the Check Alerts:

- a) Select an element with a Check Alert in the XML tree;
- b) Click the  **Select and Zoom to Dynamic Object** button on the bottom toolbar of the Dynamic Content palette.




The Dynamic Objects that have been modified are now visible and selected on the Illustrator artboard.
- c) Make any changes to the Dynamic Objects that are needed as a result of the updated text.
- d) Click the  **Clear Check Alert** button on the bottom toolbar of the Dynamic Content palette to remove the Check Alert from this element, then proceed to the next element until there are no more Check Alerts in the XML tree.

Tip:

Add a filter of the type “Elements with Updated Text” to display only those elements that require your attention after a change in the XML file.

3.5.3. Applying Text Edits in Illustrator to the XML File

If you have edited the text of one or more XML elements using the **Edit Element** command on the Dynamic Content fly-out menu, you will have to decide whether or not you want to apply those changes to the external XML file.

1. Open the Illustrator file that contains text edits that have not yet been applied to the XML file.
2. Review each of the text edits by selecting the elements that are marked by a  Check Alert, and then clicking the  **Select and Zoom to Dynamic Object** button on the bottom toolbar.
3. Make any required changes to the design or to the text.
4. Click the  **Synchronize** button on the top toolbar to apply the text edits to the XML file.

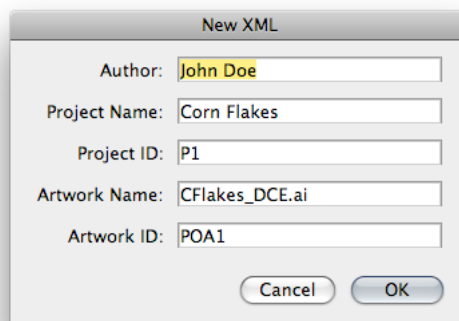
3.5.4. Creating New XML Files in Illustrator

Dynamic Content allows you to create new XML files with the GS1 or IPC XML schema directly from within Illustrator, based on the text you may already have in your designs. Typically, you will use this feature to convert existing, legacy designs into XML-driven, Dynamic Content designs.

New XML

Use the **New XML...** command on the Dynamic Content fly-out menu to create a new (empty) XML file.

1. Choose **New XML...** from the fly-out menu.
 - When using IPC standard, the **New XML** dialog box appears. Fill in all the fields. The metadata section of your XML file will be filled in based on the information you supplied.



- When using GS1 standard, the GS1 file is created with default values in its header, without asking the user.

You can set the IPC or GS1 standard in the Preferences. See [Dynamic Content Preferences](#) on page 94

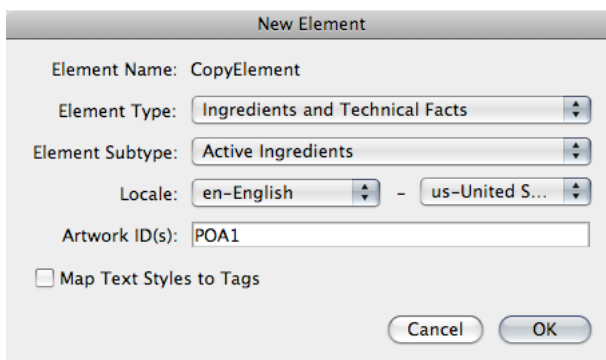
2. Click **OK**.
A new XML file based on the standard IPC or GS1 schema is created.

Add Illustrator Text to the XML

Use the New Element command on the Dynamic Content fly-out menu to add text content from selected Illustrator text objects to the linked IPC XML file. This also converts the selected Illustrator objects into Dynamic Objects.

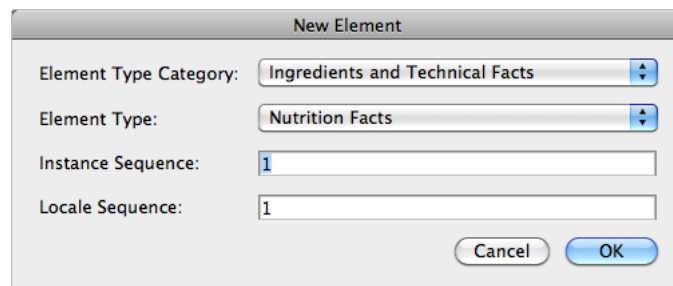
The Illustrator document must be linked to an IPC-based XML file.

1. Select one or more Illustrator text objects.
2. Choose **New Element** from the fly-out menu.
The **New Element** dialog box appears.
3. When using the IPC XML standard:



- a) Choose a CopyElement type from the Element Type and Element Subtype lists.
- b) If necessary, select the language (locale) of the element content from the Locale lists.
- c) Enter the identification code of the design (e.g. POA1) in the Artwork ID box.
- d) If you want to map the text styles in the selected Illustrator text object to XML tags inside the CopyElement, enable the **Map Text Styles to Tags** option.
Dynamic Content will attempt to preserve the formatting of the original text by inserting additional XML tags, which are automatically mapped to the text styles that were applied to the Illustrator text object.

4. When using the GS1 XML standard:



- a) Choose an **Element Type Category** and an **Element Type**.
- b) Define the **Instance Sequence**. This allows to identify different elements of the same Type.
- c) Define the Locale Sequence. The POA header defines a number for each language. The **Locale Sequence** in each element refers to that mapping

5. Click **OK**.

The new content is added to the internal representation of the XML file. When using the **Synchronise** function, the new content is written to the external XML file.

3.6. Editing Dynamic Objects

This section examines the editing features in Dynamic Content.

The following editing operations are available in Dynamic Content:

- You can edit the text of an XML element directly inside Illustrator. Also, you can transform the Illustrator text boxes that are the basis of the Dynamic Objects.
- You can insert a specified set of special characters (such as spaces, hyphens or tabs) in a Dynamic Object to improve the text layout.
- You can insert text from additional XML elements in an existing Dynamic Object, either by appending it at the end or by inserting it at the start of the existing text content.
- Fit Text Frame to Contents (Auto-grow) or Fit Contents to Text Frame (copy-fitting). See [Fit Text Frame to Contents / Fit Contents to Text Frame](#) on page 76

- You can edit the properties of dynamic barcodes and nutrition tables using the Dynamic Tables and Dynamic Barcodes plug-ins.

3.6.1. What is a Dynamic Object?

A Dynamic Object is an Illustrator text object that has been linked to an XML element using the Dynamic Content plug-in.

Dynamic Content encapsulates the original text object in the Dynamic Object, and in the process it prevents a number of changes from being made: you can no longer use the standard Illustrator Text tools to modify the contents of a Dynamic Object.

3.6.2. Which Standard Illustrator Edits Are Allowed?

A Dynamic Object is protected from text edits using the Illustrator Text tools. However, you can still modify the text of a Dynamic Object to a certain extent.

The following edits remain possible:

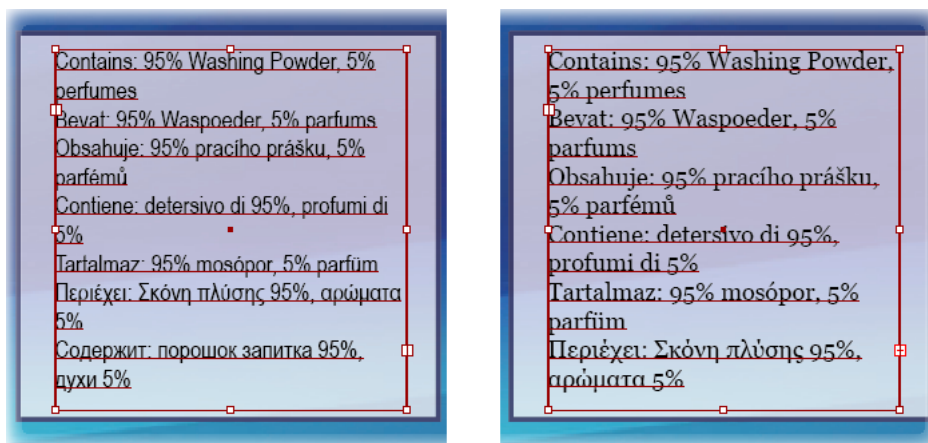
- You can move, rotate or scale the Dynamic Object using the standard Illustrator transform tools.
- You can change the formatting (e.g. the font family or alignment properties) of the text by applying text styles in Illustrator. To do this, use the controls on the Type palette in Illustrator.
- You can change the color of the text.

Note:

When you scale a Dynamic Object, its text content is scaled as well. To allow the text box to “reflow” as per the standard Illustrator behavior, click the Reflow Text button on the top toolbar before making any changes.

Example: font changes to a Dynamic Object

In the following example, a Dynamic Object was selected and the font used for the text was changed using the Type palette in Illustrator. Note that changes like this may cause text overflow problems.







3.6.3. Inserting Additional XML Elements in a Dynamic Object

Once a Dynamic Object has been created, you can add additional content (from other XML elements) to this same object. New content can be added either to the end of the content (Insert at End) or, if needed, before the beginning of the existing content (Insert at Start).

Note:

This feature applies to a single Dynamic Object. You can therefore have a Dynamic Object that is linked to XML Element A, and another Dynamic Object in the same design that is linked to both XML Element A and Element B.

1. Select a Dynamic Object on the Illustrator artboard.
2. In the XML tree, select the XML element that you want to add to the Dynamic Object
3. Do one of the following:
 - To **append** the text of the new XML element at the end of the Dynamic Object, click the  **Insert Element in Dynamic Object** button on the bottom toolbar of the Dynamic Content palette. Alternately, use **Insert at End** on the Dynamic Content fly-out toolbar.
 - To **insert** the text of the new XML element in between two XML elements linked to the single Dynamic Object, place the Type Tool cursor between the two linked elements, and use the **Insert at Cursor Position** option on the Dynamic Content fly-out toolbar.
 - To **insert** the text of the new XML element at the start of the Dynamic Object, **Alt+Click** the  **Insert Element in Dynamic Object** button on the bottom toolbar of the Dynamic Content palette. Alternately, use **Insert at Start** from the Dynamic Content fly-out menu.

The new XML content is added to the Dynamic Object.

Tip:

You can define how the different XML elements should be combined in the Dynamic Objects by using the **Format Dynamic Text** command in the fly-out menu.

3.6.4. Formatting Multiple Elements in a Single Dynamic Object

In the Format Dynamic Text dialog box, you can view information on the XML elements linked to the selected Dynamic Object, and you can define exactly how these XML elements should be combined in the object.

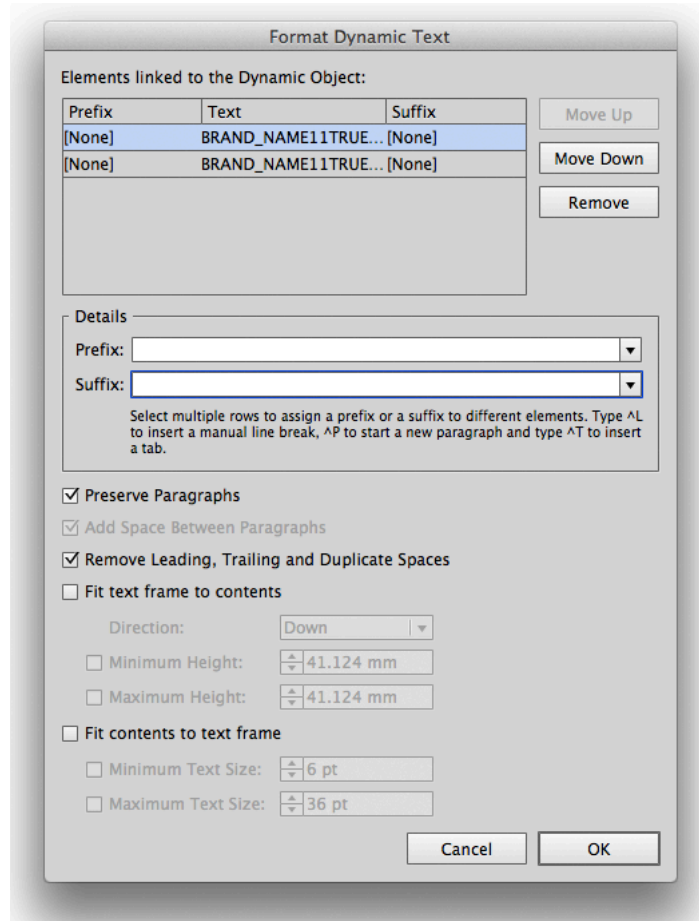
Tip:

You can also use the Format Dynamic Text command to insert a text prefix before the XML element content (e.g. to add "Ingredients: " before the ingredients list), even without adding multiple elements to a single Dynamic Object. You can also add a suffix in the same way.

1. Select a Dynamic Object on the Illustrator artboard.

- Choose **Format Dynamic Text** on the Dynamic Content fly-out menu.

The Format Dynamic Text dialog box appears.



- Make any needed changes to the formatting of the elements in the Dynamic Object:

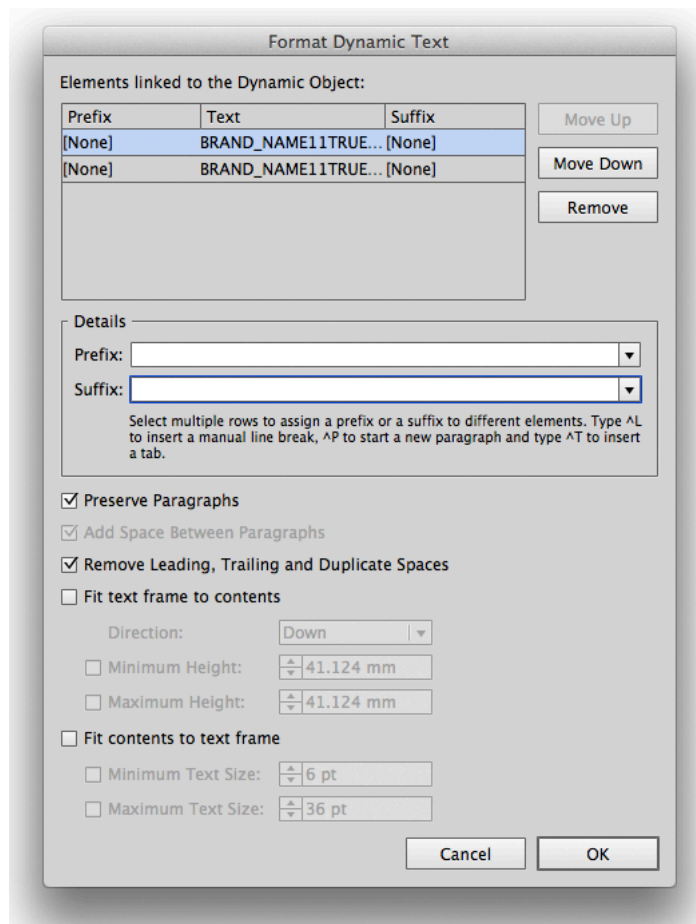
If you want to...	Then...
Insert text or special characters before one or more elements	Select the element(s) in the list and type the desired prefix in the Prefix field.
Insert text or special characters after one or more elements	Select the element(s) in the list and type the desired prefix in the Suffix field.
Treat all elements as part of the same block of text, without paragraphs	Deselect the Preserve Paragraphs option.
Change the order in which the elements appear in the Dynamic Object,	Select the element(s) you want to move, and click the Move Up or Move Down buttons.
Remove blank spaces in the elements,	Enable the Remove Leading, Trailing and Duplicate Spaces option. This removes any undesirable whitespace characters from the XML before the text is displayed in the Dynamic Object. Additional whitespace characters are

If you want to...	Then...
	sometimes added by XML editors in an effort to make the XML more legible for human readers.

4. Click **OK**.

3.6.5. Fit Text Frame to Contents / Fit Contents to Text Frame

In the **Format Dynamic Text** dialog, you can view information on the XML elements linked to the selected Dynamic Object, and set automatic modification of the Dynamic Object size or the text size within the Dynamic Object.



The **Fit Text Frame to Contents** (Auto-grow) and **Fit Contents to Text Frame** (Copy-fitting) options allow setting the options for future use in Dynamic Content. They can only be set if **Assign multiple XML Attributes** is enabled. You can choose to fit the text frame to the contents, or fit the contents to the text frame. Combining the two is not possible.

Fit Text Frame to Contents

Fit text frame to contents

Direction:

Minimum Height:

Maximum Height:

If you use **Fit Text Frame to Contents**, the text box will grow to fit the actual text content, coming from the XML source. The text box size will be adapted every time the XML source changes.

This option is useful when you're not sure what amount of text will come from the XML, and you want to avoid text overflow.

- The **Direction** defines in what direction the text box can grow: down, up, to the left or to the right.
- Using **Minimum Height** and **Maximum Height** (or width, depending on the direction) you can define the minimum and maximum size for the text box.

Note: This option is only available for Area Text objects, so not for Text on Point or Text on Path

Fit Contents to Text Frame

Fit contents to text frame

Minimum Text Size:

Maximum Text Size:

If you use **Fit Contents to Text Frame**, the font size will change to fit the text frame.

This option is useful when the space for the text is limited, and font size changes are allowed by the design rules.

- The **Minimum Text Size** and **Maximum Text Size** define the minimum and maximum font size to be used.

Note: This option is only available for Area Text objects and Text on Path, so not for Text on Point.

3.6.6. Editing the Text of an XML Element


You can edit the text of a Dynamic Object by using the Edit Element command on the fly-out menu. This will change the contents of the linked XML file itself. Of course, Dynamic Content marks these changes so you can review them before they are applied to the external XML file.

The Edit Element dialog box displays the text of the selected XML element. The XML tags from the linked XML file are displayed as square brackets []. This makes it easier to focus on editing the text without worrying about XML structure and syntax.


Note:

The square brackets ([]) in the Edit Element dialog box represent XML opening and closing tags. To type a square bracket in the text of your design, use the following codes: `&left;` for “[” or `&right;` for “]”.

1. Select the XML element for which you want to edit the text content in the XML Tree.
2. Choose **Edit Element...** in the fly-out menu of the Dynamic Content palette.
The **Edit Element** dialog box appears.
3. Make changes to the text where needed.
4. Click OK to apply the changes to your design.

The new text is used in any Dynamic Objects linked to the XML element you edited, and the XML element itself marked with a  Check Alert icon in the XML Tree.

However, the new text is not yet saved in the linked XML file. To save your edits:

- Click the  **Synchronize** button on the top toolbar. This will save your edits into the currently linked XML file.
- Alternatively, choose **Save XML As...** from the fly-out menu to save the new content into a new XML file.

The Edit Element Dialog Box in Detail

The Edit Element dialog box displays all the text of the selected XML element and its children.

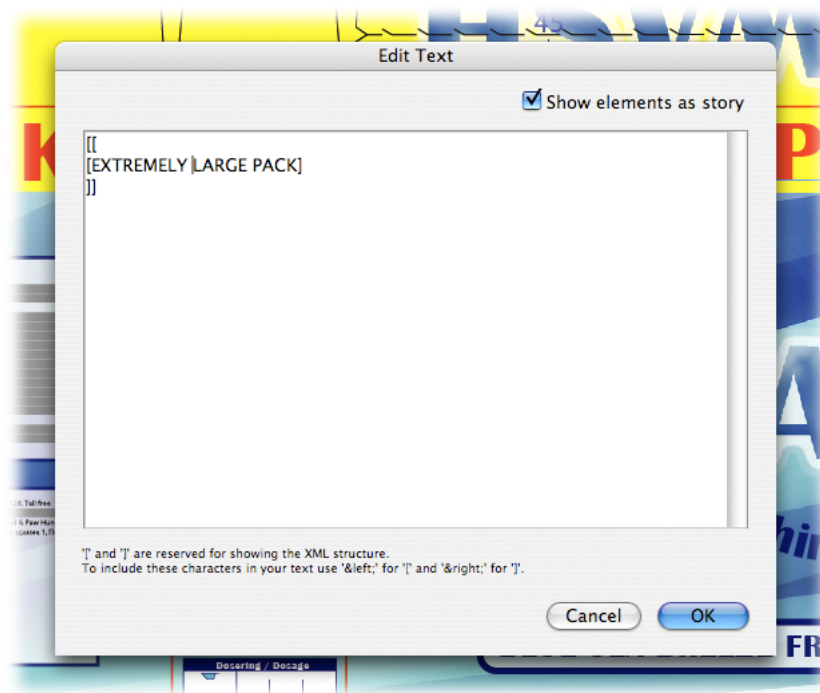
The XML tags from the linked XML file are replaced by square brackets []. This makes it easier to focus on editing the text without worrying about XML syntax.

The option **Show elements as story** formats the content in the editing area in a more user-friendly manner. If you disable this option, every element starts on a new line in the editing area.

Note:

The square brackets ([]) in the Edit Element dialog box represent XML opening and closing tags. To type a square bracket in the text of your design, use the following codes: `&left;` for “[” or `&right;` for “]”.

The square brackets “[]” cannot be deleted, because they represent the structure of the XML tree.



3.6.7. Making minor layout edits

The text of a Dynamic Object is protected from direct editing using the Illustrator Type tools (Type tool, Area Type Tool, ...). However, you can use the Type tools to make minor layout edits in a very strictly defined number of cases.

Text in a Dynamic Objects cannot be edited using the Type tools because this would go against the basic workflow principle of Dynamic Content: to make sure that your design remains synchronized with the external content and only displays text sourced from the linked XML file(s).

If you do try to edit a Dynamic Object, you will find that you can only insert a limited number of layout characters (i.e. tab, line break, ...) and that all other edits will be blocked.

Figure 1: The Illustrator Type tools can only be used to insert layout characters



- You can insert the following special characters:

This character...	Can be inserted...
a whitespace character	<ul style="list-style-type: none"> after an existing whitespace character in the XML content; after a manually added hyphen.
a hyphen (-) character	<ul style="list-style-type: none"> inside an existing word in the XML content; after a manually added whitespace character.

This character...	Can be inserted...
a slash (/) character	<ul style="list-style-type: none"> • before or after existing space, tab, paragraph or a line break in the XML content; • after a manually added hyphen character.
a tab character	<ul style="list-style-type: none"> • after any whitespace character (existing or manually added); • after a manually added hyphen character, if that is not already followed by a manually added whitespace.
a new paragraph (return) and a line break (shift +return) character	<ul style="list-style-type: none"> • after any whitespace character (existing or manually added); • after a manually added hyphen character, if that is not already followed by a manually added whitespace.

3.6.8. Releasing a Dynamic Object to regular text

You can easily convert a Dynamic Object back into a regular Illustrator text object. To do this, either use the **Release** or the **Release and Convert** command on the fly-out menu of the Dynamic Content palette. **Release** completely removes the XML link information from the text, while **Release and Convert** converts the text to a Dynamic Art placeholder, maintaining the link information.

Designers who do not have access to the Dynamic Content plug-in can choose to convert the Dynamic Objects (which retain their special, protected status even when opened on a workstation without Dynamic Content) back into regular text objects using the Illustrator command **Object > Expand...**

This allows them to work on the design and make changes where needed, but it also breaks the Dynamic Content workflow.

Note:

When you release a Dynamic Object using one of the two available methods, the link to the XML element(s) is permanently broken. Releasing a Dynamic Object using **Release and Convert** only keeps the link information for future use as a Dynamic Art template.

- To release a Dynamic Object, select it on the Illustrator artboard and:
 - Choose **Release** from the Dynamic Content fly-out menu; or
 - Choose **Release and Convert** from the Dynamic Content fly-out menu; or
 - Choose **Object > Expand...** from the Illustrator menubar.

3.6.9. Exchanging Dynamic Content Documents

If you have to send an Illustrator document that contains linked objects that were created by the Dynamic Content plug-in to someone who does not have the plug-in, you have two options.

- You can release the Dynamic Objects back to normal Illustrator objects before sending the document to the recipient. Select all the linked objects and then choose the Release command on the fly-out menu.

The document no longer contains any Dynamic Objects and all links to the XML file(s) have been removed.

- You can send the Illustrator document to the recipient without removing the Dynamic Objects.

If the recipient...	Then (s)he ...
does not need to edit the text in the Dynamic Objects	can work with the Illustrator document without noticing any difference with a regular Illustrator document.
needs to edit the text of a Dynamic Object	<p>has to use the Expand command on the Object menu in Illustrator.</p> <div style="border: 1px solid black; padding: 5px; background-color: #f0f0f0;"> <p>Note: Take care when using the Expand command in Illustrator. If you apply the command to other objects in your design (e.g. blends, text, ...) it can cause unexpected changes in your design. For this reason, it is often advisable to release the Dynamic Objects before sending it to any recipients who do not have access to the Dynamic Content plug-in.</p> </div>

3.7. Styling your Dynamic Objects

There are two approaches to styling the Dynamic Objects in your design: manual styling and automated styling (Style Mapping). In this section you will learn how to apply both these methods, how to solve common problems such as text overflow, and more.

3.7.1. Two Approaches to Text Styling

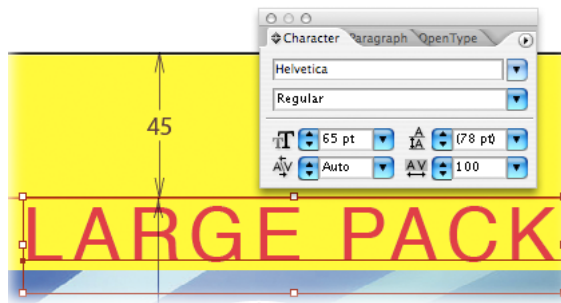
The two approaches for styling your Dynamic Objects each have their specific use cases. Obviously, the automated method will save you time in certain situations, but it can only be used efficiently if your source XML file contains presentation-related information. This section further explores the differences, and explains exactly how to apply both the manual and automated styling methods.


What Is Manual Styling?

The easiest - but not always the most efficient - approach to styling the text in your Dynamic Objects is to use the Character and Paragraph palettes in Illustrator.

In other words, applying the manual method - sometimes called the "template-based" styling approach - means that you must select every Dynamic Object in the design and apply the appropriate style formats manually.

Alternatively, of course, you can set up your design with properly styled "dummy text" boxes even before you create Dynamic Objects. In this case, the Dynamic Content plug-in will apply the last style found in the Illustrator object to the text in the new Dynamic Object.



When a Dynamic Object contains multiple styles, Dynamic Content will attempt to preserve these styles whenever the content is updated. In some cases, when there are major changes to the content of a Dynamic Content, this will prove impossible. To alert you to this possible loss of formatting, a special  Check Alert will appear in the XML Tree for the affected elements.

Note:

For more information, please refer to the Adobe Illustrator Help in the Type chapter.

What Is Style Mapping?

Style Mapping allows you to automate the formatting of your Dynamic Objects to a very high degree. You apply Style Mapping by linking XML elements to named styles in Illustrator

Mapping Elements to Styles

Using the Style Mapping dialog box, you define the relationship between the XML elements in the linked XML file(s) and named Character and Paragraph Styles in your Illustrator design. Once this relationship has been defined, every Dynamic Object that incorporates a specific XML element will automatically be formatted with the corresponding Paragraph and/or Character Styles.

Style Hierarchy

Styles in Adobe Illustrator apply to text objects in a specific order. This is of particular importance when defining Style Mappings, as you will be setting up both Paragraph Styles (e.g. for a 'p' tag in the XML file) as well as Character Styles (e.g. for a 'bold' tag in the XML file).

Style types have a built-in hierarchy, with the last level overruling all the preceding information:

1. First, the named **Paragraph Style** is applied.
2. Any **Character Styles** applied to a specific section in a paragraph overrule the formatting of the Paragraph Style.
3. Finally, local **overrides** overrule the Character Style. An override occurs when you manually change a property (i.e. change the font size) in the Character palette without updating the Character Style itself.

An Example of Style Mapping

In the following example, we will use some HTML content from a web page that we saved in XML format, link it to our design in Illustrator, and then apply Style Mapping to automatically recreate the styling from the original web page.

Esko Software Suite 7 is:

- [DeskPack](#) - Professional Packaging in Adobe Illustrator and Adobe Photoshop
- [Colortone](#) - Production Color Retouching
- [PackEdge](#) - PDF editor for packaging
- [Visualizer](#) - Creation of moving realistic mock-ups of packaging design
- [ArtiosCAD](#) - Structural design and manufacturing
- [Kaleidoscope](#) - Color management tool
- [FlexRip](#) - RIP files for every printing process
- [FlexProof](#) - Produces output for any kind of proofing system
- [FlexoPerfection](#) - Bitmap editor for flexographic printing
- [Digital Flexo Suite](#) - Significant cost saving through automated flexoplate optimization
- [BackStage](#) - Smart workflow server
- [WebCenter](#) - The ultimate collaboration, approval and project management tool for packaging workflows
- [Plato](#) - Build for intuitive Plate Layout
- [FastImpose](#) - Advanced imposition

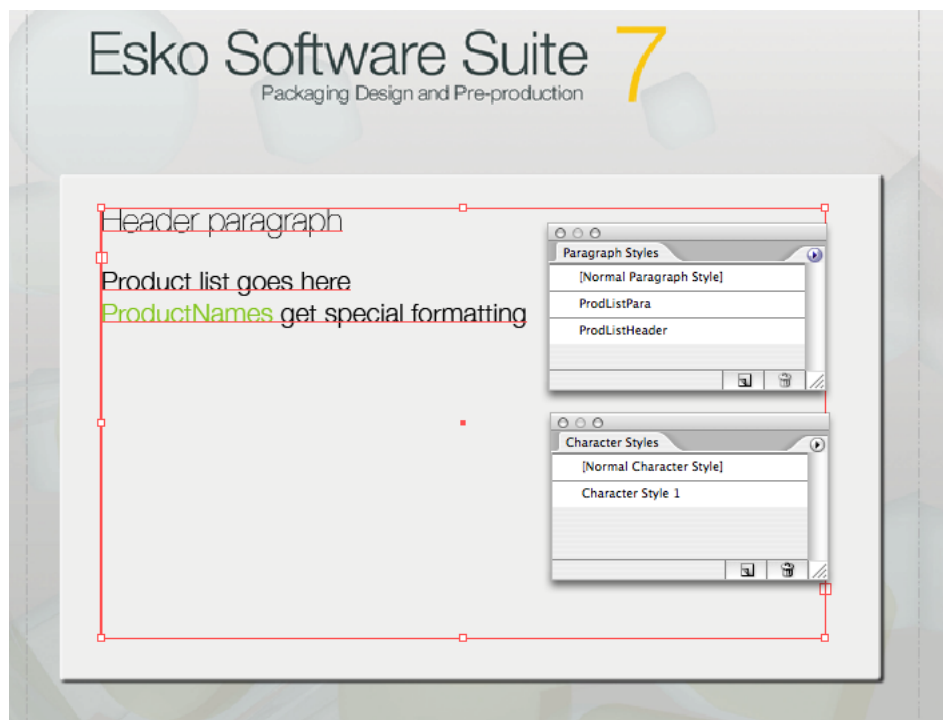
Step One: Preparing the Files

First, we save the snippet of HTML (actually it is XHTML, a special flavor of HTML that conforms to the XML standard) as an XML file, so we can link to our design using Dynamic Content.

```
<!DOCTYPE html (View Source for full doctype...)>
- <html xmlns="http://www.w3.org/1999/xhtml">
  <head />
  <body>
    <p>
      <strong>Esko Software Suite 7 is:</strong>
    <p>
      <a href="/Web/site.aspx?p=113" shape="rect">DeskPack</a>
      Professional Packaging in Adobe Illustrator and Adobe Photoshop
    <p>
      <a href="/Web/site.aspx?p=203" shape="rect">Colortone</a>
      Production Color Retouching
    <p>
      <a href="/Web/site.aspx?p=199" shape="rect">PackEdge</a>
      PDF editor for packaging
    <p>
      <a href="/Web/site.aspx?p=1185" shape="rect">Visualizer</a>
      Creation of moving realistic mock-ups of packaging design
    <p>
      <a href="/Web/site.aspx?p=207" shape="rect">ArtiosCAD</a>
      Structural design and manufacturing
    <p>
      <a href="/Web/site.aspx?p=290" shape="rect">Kaleidoscope</a>
      Color management tool
  </body>
</html>
```

Then, we prepare some named styles in our Illustrator design: the Paragraph Styles ProdListPara and ProdListHeader, and the Character Style ProdName.

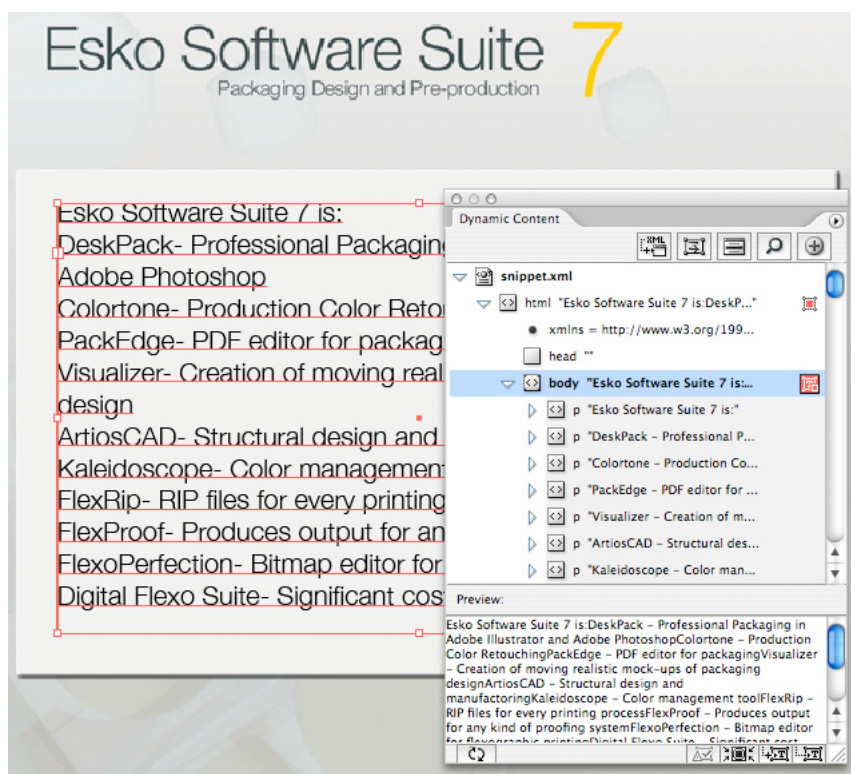
As you can see, the Illustrator text box already contains some dummy text that enables us to test these styles.



Step Two: Linking the XML File

In this second stage, we link the XML file to the Illustrator using the Add XML File command. Then we convert the text object into a Dynamic Object by linking it to the <body> element.

The result: we lose all of our carefully applied styling. A warning message informs us that not all the style information could be retained during the conversion. Not all is lost, however, as we will restore the styling using Style Mapping.



Step Three: Setting Up Style Mapping

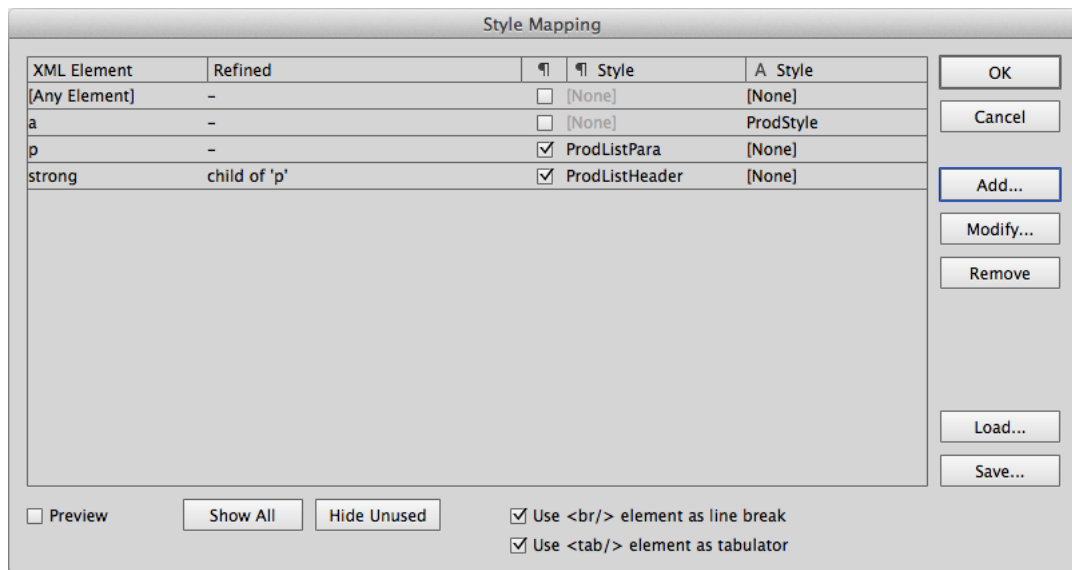
In this third and final step, we use **Style Mapping...** command on the fly-out menu to define the relationships between the predefined Styles on the one hand, and the XML elements on the other.

In this example, we link the `<p>` tag (which is the basic xhtml paragraph) to the **ProdListPara** Paragraph Style in Illustrator. The `` tag is also defined as a paragraph, this time using the **ProdListHeader** style, creating a nice title for the product list.

Finally, we link the `<a>` element to the **ProdStyle** Character Style, adding some color to the design.

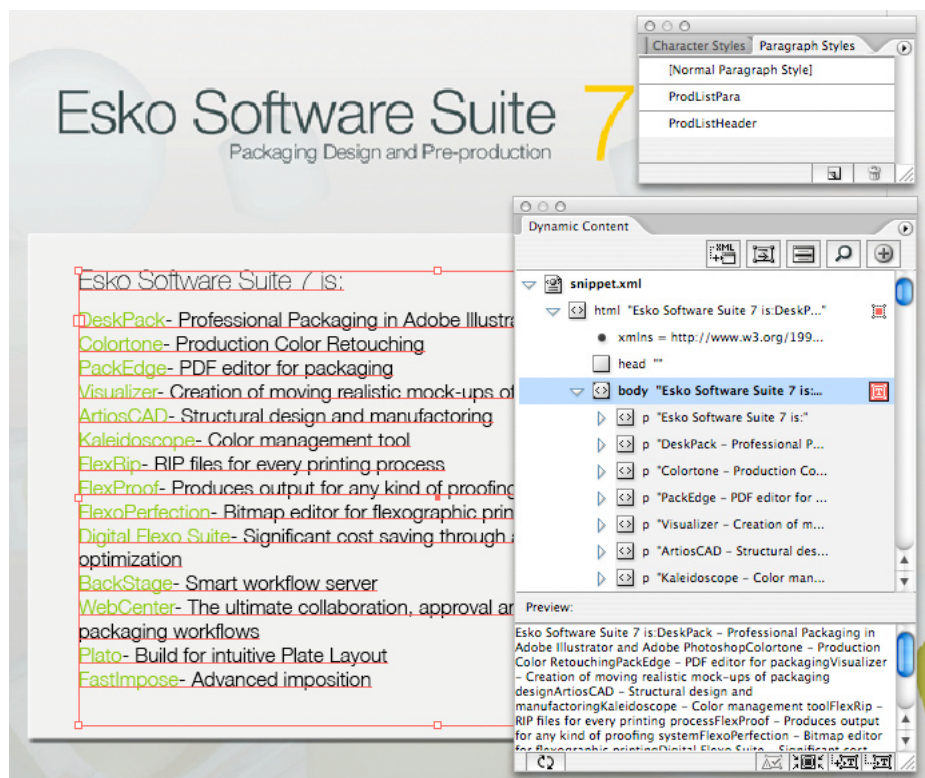
Tip:

If you just need to emphasize certain elements within the document by formatting them in bold, italic or underlined text, you can use the **Character Styling** options **Bold**, **Italic** or **Underline**.



The final result

Once we apply the Style Mapping to our design, the Dynamic Object is automatically formatted correctly. As you can see, in text-heavy designs, this can be a huge timesaver.



Applying Style Mapping

To apply Style Mapping to your document, you need to first define the named Character and Paragraph Styles that you will be using, and then set up the relationships between these styles and the XML elements using the Style Mapping command in Dynamic Content.

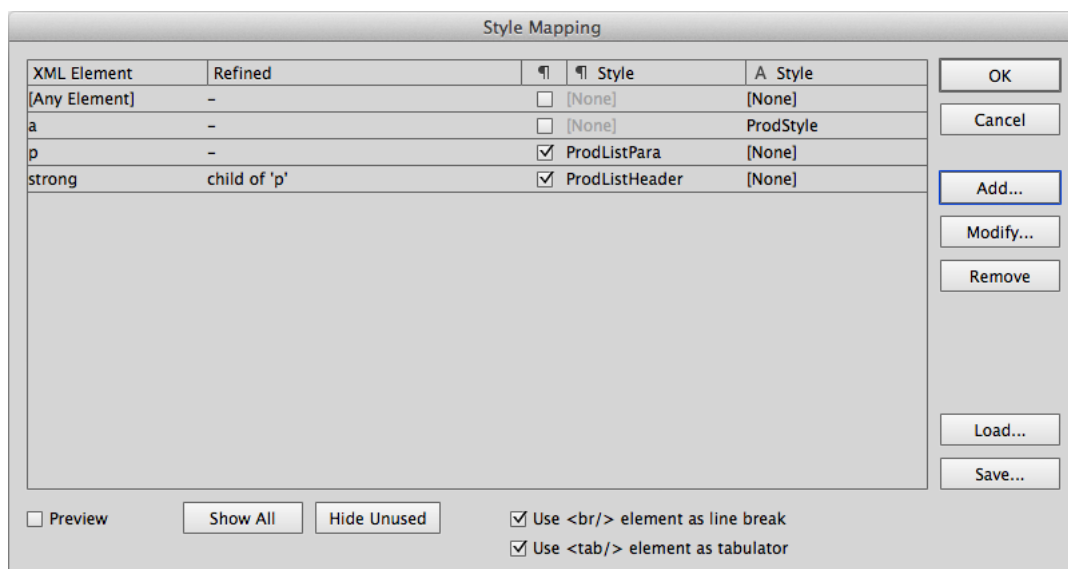
For more information on Character and Paragraph Styles in Illustrator, please consult the Illustrator Help in the Type section.

Creating a Basic Style Mapping Rule

In this task, you will set up a basic Style Mapping rule.

1. Choose **Style Mapping...** in the fly-out menu.

The Style Mapping dialog box appears.



2. Select the element in the Element List that you want to associate with an Illustrator named style.

Click the **Show All** button if you want the Element List to display all elements in the linked XML files. Otherwise, only the elements currently in use will be listed.

3. Enable the **Preview** option to immediately see the results of any mappings you make on the artboard.

4. Do one of the following:

If you want to...	Then...
map the element to a Paragraph Style	<ul style="list-style-type: none"> • Enable the Paragraph option; and • Select a Paragraph Style from the Paragraph Styles list.

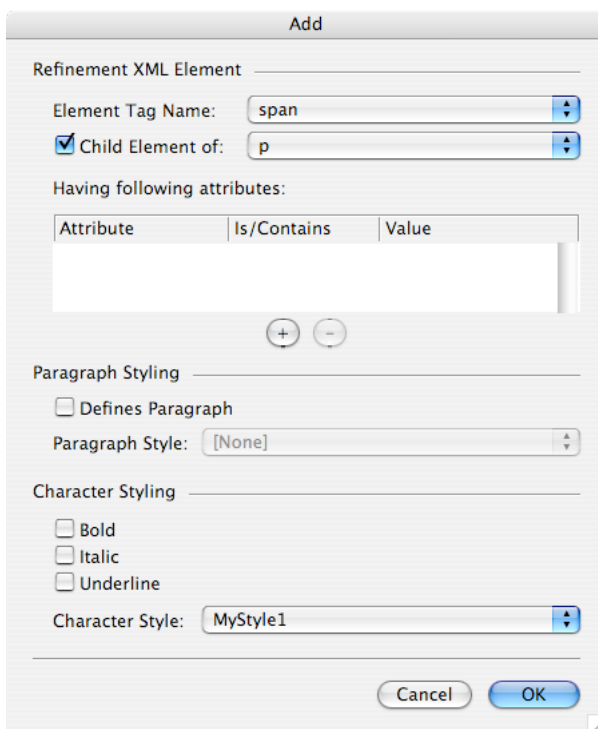
If you want to...	Then...
	<p>Note:</p> <p>You can also select a Character Style for the element. In this case, the formatting of the Character Style will be added to the Paragraph Style (overruling it in case of conflicts).</p>
<p>map the element to a Character Style</p>	<ul style="list-style-type: none"> • Disable the Paragraph option; • Select a Character Style from the Character Styles list.

5. Repeat step 4 for each of the elements you wish to map.
6. Do you want to save the Style Mapping you just defined?
 - If you do, proceed to step 7.
 - If you do not, proceed to step 8.
7. Click the **Save...** button and save the Style Mapping settings on your computer or network.
The Style Mappings are saved in a special XML format.
8. Click **OK** to apply the Style Mapping.

Creating a Location-Based Rule

In this task, you will set up a Style Mapping rule that only apply to elements at a specific location in the XML tree structure.

1. Choose **Style Mapping...** in the fly-out menu.
The Style Mapping dialog box appears.
2. Click **Add...** to create a new rule or **Modify...** to refine an existing rule.
The **Add** or **Modify** dialog box appears.
3. Select the element you want to format with a style from the **Element Tag Name** list.
4. Select the parent element of the element you want to affect from the **Child Element of** list.
In the example below the Style Mapping rule will apply only to elements that are found within a <p> element.



5. Select a Style from the **Paragraph Style** and/or **Character Style** lists.
6. Click **OK** to save the Style Mapping rule.

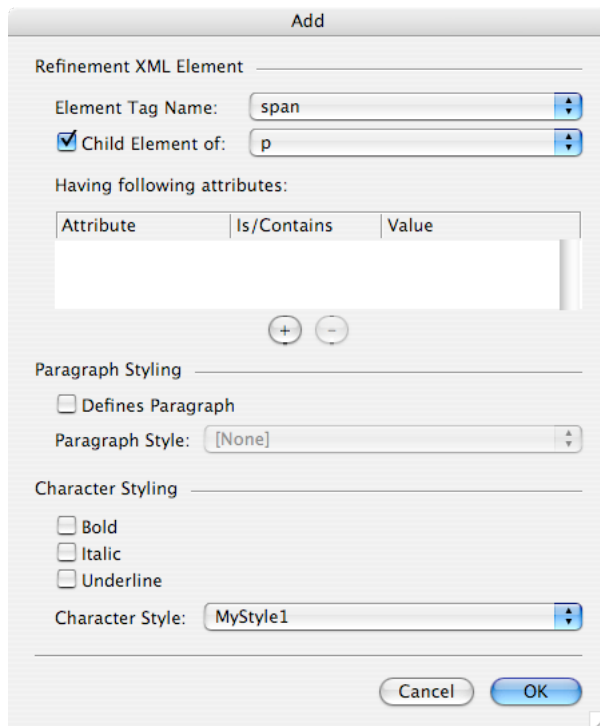
The selected style is applied to all the instances of the elements that match your selection.

Creating an Attribute-Based Rule

In this task, you will set up a refined Style Mapping rule that only applies to elements that have a specific attribute value.

Tip: Use the [Any Element] option in the Element Tag Name list to create a rule that applies to any element in the design that has a specific attribute or attribute value. For example, you could apply a red italic style to all elements that have the attribute value pair `status="to_be_reviewed"`.

1. Choose **Style Mapping...** in the fly-out menu.
The Style Mapping dialog box appears.
2. Click **Add...** to create a new rule or **Modify...** to refine an existing rule.
The **Add** or **Modify** dialog box appears.
3. Select the element you want to format with a style from the **Element Tag Name** list.
4. Select the parent element of the element you want to affect from the **Child Element of** list.
In the example below the Style Mapping rule will apply only to `` elements that are found within a `<p>` element.



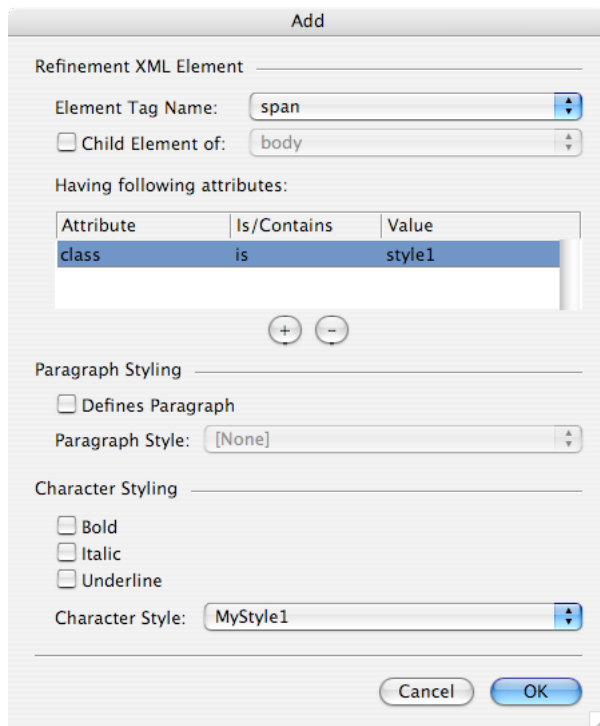
5. Click the + (**Add Attribute**) button underneath the attributes list.

Note: You can only click the Add Attribute button if the XML element you selected in the preceding steps has one or more attributes.

A new row is added to the attribute list.

6. Double-click in the Attribute column and select the attribute on which you want to base this rule from the list.
7. Do one of the following:
 - If you want the Style Mapping to affect only elements that have a specific value for the attribute you selected, choose either Is or Contains from the Is/Contains list and enter a value in the Value column.
 - If you want the Style Mapping to affect all elements on which the attribute you selected is found, regardless of the attribute value, proceed with the next step.

In the example below, only `` elements that have a `class` attribute with the value "style1" will be affected by the Style Mapping rule.



8. Select a Style from the **Paragraph Style** and/or **Character Style** lists.
9. Click **OK** to save the Style Mapping rule.

Mapping an Element to a Character Style or exact font

In this task you will map an element or attribute to a **character style** in Illustrator, such as bold, italic or underlined text, using the Style Mapping feature in Dynamic Content.

If you map an element or attribute to a character style, Dynamic Content will automatically select the appropriate variant of the font used for the dynamic object. For example, mapping to a “bold” character style will instruct Dynamic Content to switch to the Bold, Semibold or Black variant of the font in use.

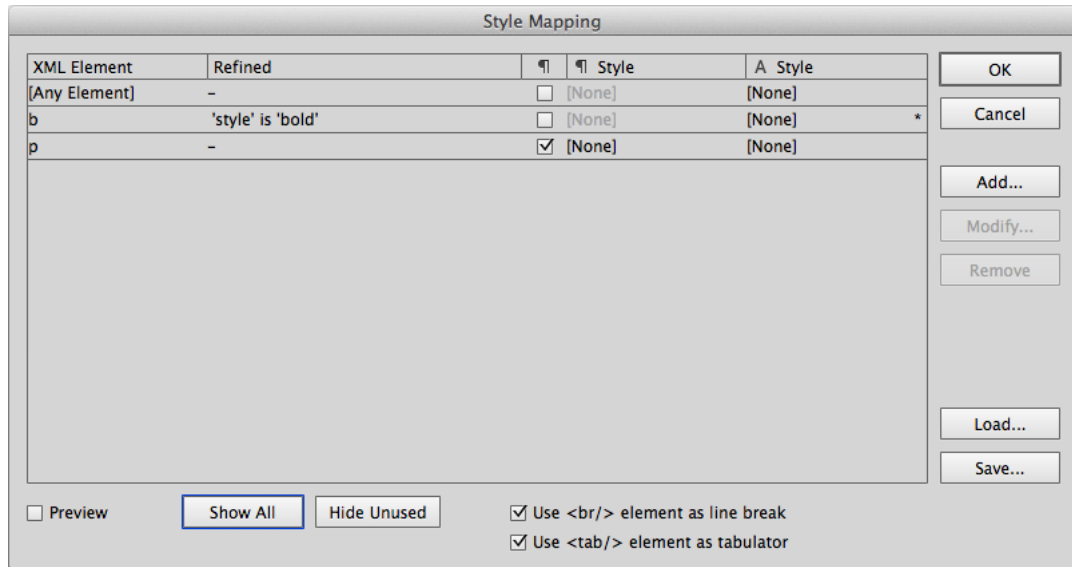
Note:

You can enable or disable the use of Semibold and Black variants in the Dynamic Content Preferences dialog.

1. Choose **Style Mapping...** in the fly-out menu.
The Style Mapping dialog box appears.
2. Click **Add...** to create a new rule or **Modify...** to refine an existing rule.
The **Add** or **Modify** dialog box appears.
3. Create an element- or attribute-based style mapping rule:
 - For an element-based rule, select the **Element Tag Name** and if necessary, further refine by selecting the parent element from the **Child Element of** list.
 - For an attribute-based rule, add an attribute by clicking the **Add** button, select the matching method from the **Is/Contains** list, and type the **Value**.

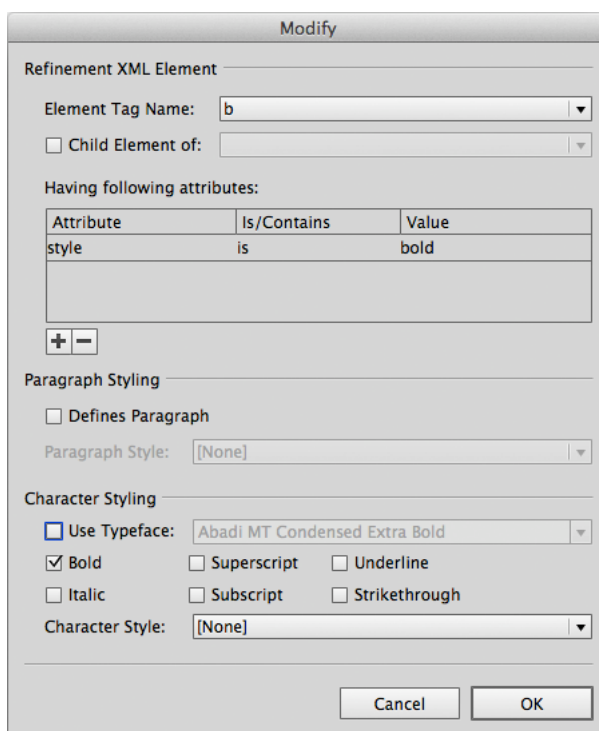
4. Select to use an exact font, or select the type of character styling you want to apply to the matching elements:
 - Enable **Use Typeface** and select the exact font to use in the dropdown. Note that selecting an exact font can't be combined with the character styling options.
 - Enable one or more of the **Bold, Italic** and **Underline** options; or
 - Select a predefined **Character Style** from the list.
5. Click **OK** to save the Style Mapping rule.

The presence of a character styling rule is indicated in the Style Mapping dialog with an asterisk.



Example

This example maps an element that also has the attribute style="bold" to the Bold character style.



When applying that style mapping rule, the following code:

```
<root>
  <p>This is a <b style="bold">bold</b> word inside a sentence.</p>
</root>
```

Would be rendered as:

This is a **bold** word inside a sentence.

Automatic Mapping of tab and line break tags

If the XML data use the standard HTML formatting tags <tab/> (for tabulator) or
 (for line break), it's possible to automatically map these tags to the appropriate formatting in Illustrator.

- Set the **Use
 element as line break** option to use all
 tags as a line break
- Set the **Use <tab/> element as tabulator** option to use all <tab/> tags as a tab in Illustrator.

Automatic Style Mapping from CHILI documents

In the CHILI editor, users can apply formatting like underscore, strikethrough, font type on the edited text.


The CHILI documents will then contain attributes, reflecting the user defined formatting.

While loading the CHILI document, the CHILI plug-in automatically adds new mappings to the Style Mapping of Dynamic Content, in order to apply the formatting defined in the CHILI document.

You can freely modify or remove the mappings after loading the CHILL document, as it behaves like normal mappings being set manually.


3.7.2. Solving Text Overflow Problems

Text overflow occurs when a text object in Illustrator contains more text than can be displayed. Dynamic Objects are especially sensitive to text overflow: their contents can be updated regularly - and all too often without any consideration for the effects the changed content can have for a design.

Luckily, Dynamic Content immediately alerts you to text overflow problems by displaying a special  Check Alert for every element in which the problem occurs.

1. After updating the contents of an XML file, click Add Filter.
2. In the Filter Type list, select Elements with Text Overflow.
Only elements with text overflow are displayed in the XML Tree.
3. Alt+Click on the Check Alert icon next to the XML element you want to fix.

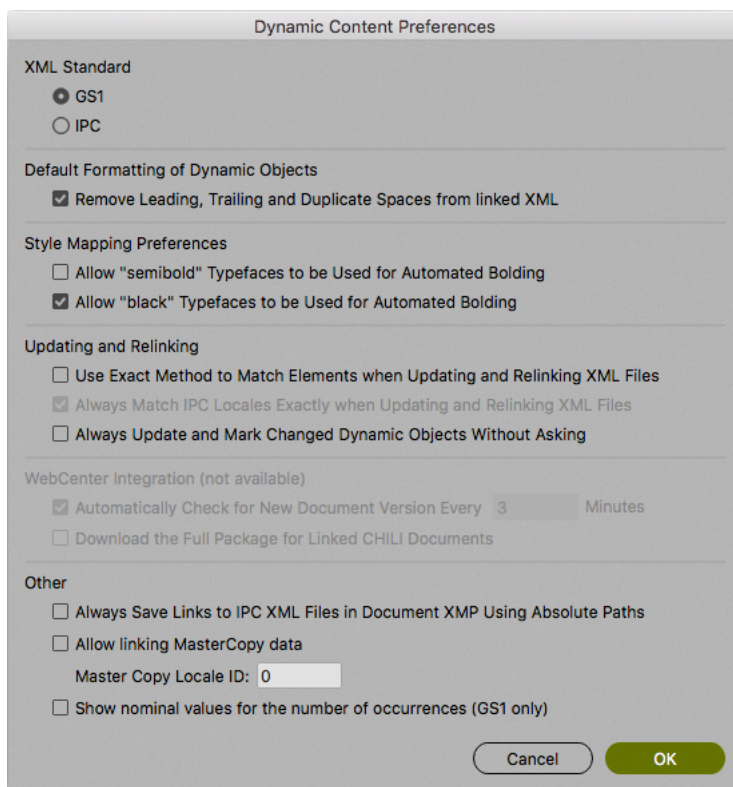
The view in Illustrator zooms to the Dynamic Object(s) linked to the element. If the element is linked to multiple Dynamic Objects, you have to select the object with text overflow manually before proceeding.

4. Do one of the following:
 - Click the  **Reflow Text** button and scale the Dynamic Object to allow for the additional text.
 - Use the Illustrator Type tools to reduce the font size of the text in the Dynamic Object.
5. Repeat steps 3 - 4 for each of the elements with text overflow, until the filtered XML Tree does not display any more elements.

3.8. Dynamic Content Preferences

The Dynamic Content Preferences allow you to determine some XML processing settings.

The Dynamic Content Preferences dialog box



3.8.1. XML Standard

The **XML Standard** option determines the default behavior related to the XML standards. If the GS1 standard is selected (default), the new XML files and XML elements created by the Dynamic Content plug-in and the XML file created by the Export Artwork Response command conform with the GS1 schema. The IPC option changes this behavior to let these files conform with the IPC XML schema.

3.8.2. Default Formatting of Dynamic Objects

The **Remove Leading, Trailing and Duplicate Spaces from Linked XML** option determines how Dynamic Content treats whitespace in linked XML elements.

If you enable the **Remove Leading, Trailing and Duplicate Spaces from Linked XML** option, Dynamic Content will remove any whitespace characters preceding or following the text inside an XML element that is linked to a Dynamic Object

Note:

The space stripping function removes all leading, trailing spaces, except those directly preceding and following a nested XML element. Otherwise, text in nested elements would be rendered “glued” onto the preceding and following text.

Example

Consider the following XML snippet:

```
<root>
  <p> This text has <b>leading and trailing</b> spaces. </p>
</root>
```

If the **Remove Leading, Trailing and Duplicate Spaces from Linked XML** option is enabled, this text in any linked Dynamic Objects will be stripped of the extra whitespaces. However, a single space will be retained before and after the contents of the element ("leading and trailing"). The result:

```
This text has leading and trailing spaces.
```

If all spaces surrounding the nested element were also stripped, the element would read:

```
This text hasleading and trailingspaces.
```

3.8.3. Style Mapping Preferences

The following Style Mapping Preferences can be set in the **Dynamic Content Preferences** dialog:

Preference	Description
Allow "semibold" typefaces to be used for automated bolding	<p>Allows Dynamic Content to select the Semibold variant of the current typeface, if it is available, when applying character style mapping.</p> <p>For example, if this option is enabled, text in the Minion Pro Regular typeface will be emboldened using Minion Pro Semibold. If this option is not set, Minion Pro Bold will be used.</p>
Allow "black" typefaces to be used for automated bolding	<p>Allows Dynamic Content to select the Black variant of the current typeface, if it is available, when applying character style mapping.</p> <p>For example, if this option is set, text in the Minion Pro Bold typeface will be emboldened using Minion Pro Black. If this option is not set, the Minion Pro Bold will stay untouched.</p>

Note:

If both these options are disabled, Dynamic Content will only search for Bold variants of typefaces when applying character style mapping.

3.8.4. Updating and Relinking

The **Use Exact Matching when Updating and Re-linking XML Files** option determines how Dynamic Content links a specific XML element to a Dynamic Object in the Illustrator document. By default, this option is disabled.

Smart or Exact Matching?

Dynamic Content stores the link between an XML element in the source XML file and the Dynamic Object in the Illustrator design in an "absolute" path. This absolute path contains the complete XML tree structure leading up to the XML element in question. This includes all attribute values of all the elements at a higher level.

By default, Dynamic Content does not use Exact Matching to link an XML element to a Dynamic Object when you update or replace an XML file. Instead, it uses a "smart" matching algorithm to determine the most likely candidate for linking. This algorithm takes into account all of the information in the absolute path, but uses a weighting scheme that allows for small changes in the XML file without breaking all the links to the Dynamic Objects.

If the **Use Exact Matching when Updating and Re-linking XML Files** option is enabled, Dynamic Content will instead require an exact match to the XML element's path. In this case, if any XML elements in the external file have changed position or received new attribute values, the links to the Dynamic Objects will be lost. Usually, this is not the desired behavior.

Example

Consider the following basic XML tree:

```
<CopyElement CopyElementType="Usage">
  <body>
    <p lang="de">Automat 40° 60° 90°</p>
    <p lang="ru">Автоматическая 40° 60° 90°</p>
  </body>
</CopyElement>
```

If you link the final <p> element (<p style="put_style_here">##### 40° 60° 90°</p>) to a Dynamic Object, an absolute path to this element is stored. This path includes a reference to the position of the <p> element relative to its parent, as well as the value for the lang attribute ("ru").

We complete the XML content by adding an additional language:

```
<CopyElement CopyElementType="Usage">
  <body>
    <p lang="de">Automat 40° 60° 90°</p>
    <p lang="en-us">Washer 40° 60° 90°</p>
    <p lang="ru">Автоматическая 40° 60° 90°</p>
  </body>
</CopyElement>
```

If we update our Illustrator design:

- with Exact Matching enabled: the last <p> element's link to the Dynamic Object will be broken, because the position of this element relative to its parent has changed from being the second child to third child.
- with the default behavior (Exact Matching is disabled): the last <p> element's link to the Dynamic Object will be retained. Even though the position of the <p> element has changed, the fact that its attribute value still matches the original path will result in a weighted, smart match.

Always Match IPC Locales when Updating and Re-linking XML Files

When using the IPC standard, and not using **Exact Matching when Updating and Re-linking XML Files**, you can choose this option.

The option is applied when re-linking the XML file. Example: A text object is linked to the Copy element identified by the CopyElementType="MarketingClaim", ID="XY" and Locale="en-US" attributes. The new XML file may or may not contain an element with the same identification; Dynamic Content tries to find and match the element from the new XML file and link it instead the old one - potentially followed by the content update.

If this options is set, the elements match if Copy Element Type, ID and also Locale attributes are the same in the old and the new XML file.

If this option is not set, the Locale attribute is not taken into account. It allows re-linking files with the language variants - e.g. the new XML file can contain the translation to German language and if the element is identified by CopyElementType="MarketingClaim", ID="XY" and Locale="de-DE", the re-link will pass and the original English content will be replaced by the German one.

Consider IPC CopySourceRef While Matching

One of the IPC attributes identifying the copy elements is **CopySourceRef**. If the **Consider IPC CopySourceRef While Matching** option is enabled, the CopySourceRef attribute of the original element and the element in the new XML file must match to let the new element replace the old one. If the option is disabled, the CopySourceRef attribute is ignored.

Always Update and Mark Changed Dynamic Objects Without Asking

The **Always Mark and Update Changed Dynamic Objects Without Asking** option controls how Illustrator responds to differences between dynamic objects and their corresponding XML elements.

If this option is checked, Illustrator checks for consistency between dynamic objects and XML elements when it opens a file.

If there are changes, Illustrator changes the dynamic objects and marks them as being changed.

If this option is not checked (the default), Illustrator prompts you for action.

3.8.5. WebCenter Integration

As the options in this section are related to the WebCenter connection, they are only available if the WebCenter Connector plug-in is available.

The **Automatically Check for New Document Version Every X Minutes** option sets the timer how often the WebCenter service will be asked to check if a new version of the XML file is available.

If **Download the Full Package for Linked CHILI Documents** is enabled, the WebCenter Connector will always download the full CHILI packaged file with all its resources, instead of extracting only the XML from the document.

3.8.6. Other

The **Always Save Links to IPC XML Files in Document XMP Using Absolute Paths** option controls whether Illustrator saves absolute or relative paths to XML files in the document's XMP data.

An example of an absolute path would be `file://networkstorage1/current/2496/XMLfile.xml`. An absolute path contains the complete machine and folder structure for the file location.

An example of a relative path would be `file:../../XMLfile.xml`. A relative path contains a pointer to the XML file location based on the location in which the Illustrator document was last saved. If the Illustrator document containing this XMP data were opened on another computer with different drive mapping, the proper XML file would not be found.

The **Allow linking MasterCopy data** option allows linking GS1 elements with Locale ID, which is defined as a "Master Copy". If the option is disabled, the Master Copy elements cannot be linked. The **Master Copy Locale ID** value defines the particular Locale ID that identifies the Master Copy content elements. By default this is set to 0, so all GS1 XML elements with Locale ID 0 are taken as a Master Copy element.

The **Show nominal values for the number of occurrences (GS1 only)** option changes the way the number of occurrences is displayed in the Advanced view. See [Indication of the number of occurrences](#) on page 52. If the option is enabled, the Advanced View displays how many times the link is actually used within the artwork. If disabled, the difference between the actual and the expected number of occurrences is shown.

3.9. Appendix: Introduction to XML

This Appendix gives a very brief overview of the basic concepts and terminology of the eXtensible Markup Language (XML) standard.

3.9.1. What is XML

XML is a text-based markup language that is fast becoming the standard for data interchange.

As with HTML, you identify data using **tags** (identifiers enclosed in angle brackets, like this: `<...>`). Collectively, the tags are known as "**markup**".

But unlike HTML, **XML tags identify the data**, rather than specifying how to display it. Where an HTML tag says something like "display this data in bold font" (`...`), an XML tag acts like a field name in your program. It puts a label on a piece of data that identifies it (for example: `<message>...</message>`).

3.9.2. Semantic Markup

Since identifying the data gives you some sense of what *means* (how to interpret it, what you should do with it), XML is sometimes described as a mechanism for specifying these *semantics* (meaning) of the data.

In the same way that you define the field names for a data structure, you are **free to use any XML tags that make sense** for a given application. Naturally, though, for multiple applications to use the same XML data, they have to agree on the tag names they intend to use.

Here is an example of some XML data you might use for a messaging application:

```
<message>
<to>you@yourAddress.com</to>
<from>me@myAddress.com</from>
<subject>XML is really cool</subject>
<text>How many ways is XML cool? Let me count the ways...</text>
</message>
```

The tags in this example identify the message as a whole, the destination and sender addresses, the subject, and the text of the message. As in HTML, the <to> tag has a **matching end tag**: </to>. The data between the tag and its matching end tag defines an element of the XML data. Note, too, that the content of the <to> tag is entirely contained within the scope of the <message>..</message> tag. It is this **ability for one tag to contain others** that gives XML its ability to represent hierarchical data structures

3.9.3. Tags and Attributes

Tags can also contain attributes - additional information that is included as part of the tag itself, within the tag's angle brackets.

The following example shows an email message structure that uses attributes for the "to", "from", and "subject" fields:

```
<message to="you@yourAddress.com" from="me@myAddress.com" subject="XML Is Really Cool">
<text>How many ways is XML cool? Let me count the ways...</text>
</message>
```

Since you could design a data structure like <message> equally well using either attributes or tags, it can take a considerable amount of thought to figure out which design is best for your purposes.

3.9.4. What is IPC XML

IPC XML is a flavor of XML that was designed with the specific purpose of content interchange between brand owners and their suppliers.

It is an open format that **borrowes concepts from the JDF specification** made by the CIP4 organization. The IPC XML schema was designed by the Intelligent Packaging Consortium, an informal workgroup consisting of brand owners, retailers, software vendors, consultants and packaging designers.

Dynamic Content can work with various flavors of XML (XHTML, PIM, SPL, ...). The plug-in does not place any restrictions on the XML formats you can use as long as the XML files you add to the palette

are well-formed. However, because the IPC XML schema is designed specifically for use in packaging, **Dynamic Content** has a number of features that make **working with IPC-based XML** files easier.

3.9.5. The IPC XML Schema

The root of an IPC XML file is called `<CopyContent>`. It contains 3 sections: `<RevisionHistory>`, `<Project>` information and a `<Copy>` section which contains a number of `<CopyElement>` elements that contain the actual textual contents.

Understanding a sample file

The following XML file clearly shows the three sections in an IPC XML file. All the content is enclosed in the root `<CopyContent>` tag. Following that, you see:

- The `<RevisionHistory>` element, showing that this document is now at version 1.1, after a revision by Mr. Jerry Morris.
- The `<Project>` element informs us that the project is called Diapers Test, and is meant for the USA region. The project encompasses 5 Pieces of Art (POAs): there will be five Illustrator documents that use information from this XML file.
- The `<Copy>` element lists that text content, including CopyElements for the Brand Name (Pampers), Package Count (ranging from 30 to 50 diapers), and a Generic element that shows how you can add any other textual content to the IPC XML.

```
<?xml version="1.0" encoding="UTF-8"?>
<CopyContent xmlns="http://www.esko.com/IPCSchema_1_0" Version="1.0" AgentName="PG ACT"
AgentVersion="1.0">
  <RevisionHistory RevisionNumber="1.1">
    <Revision Type="Original" Author="Jerry Morris" RevisionNumber="1.0"
    TimeStamp="2007-01-31T12:00:00+01:00" />
    <Revision Type="Change" Author="Jerry Morris" RevisionNumber="1.1"
    TimeStamp="2007-01-31T13:00:00+01:00" />
  </RevisionHistory>
  <Project ProjectName="Diapers Test" ProjectID="P1" Region="USA">
    <POAs>
      <POA ID="Common" Name="Common CopyElements" Locales="en-US es-US"/>
      <POA ID="P1_30" Name="Pampers 30 diapers for US" Locales="en-US es-US" />
      <POA ID="P1_40" Name="Pampers 40 diapers for US" Locales="en-US es-US" />
      <POA ID="P1_50" Name="Pampers 50 diapers for US" Locales="en-US es-US" />
      <POA ID="P1_50_ES" Name="Pampers 50 diapers for US, Spanish only" Locales="es-US" />
    </POAs>
  </Project>
  <Copy>
    <CopyElement ID="CP001" CopyElementType="Brand Name" SourceRef="NamesDict"
    CopySourceRef="21321" POAs="Common">
      <body>Pampers</body>
    </CopyElement>
    <CopyElement ID="CP002" CopyElementType="Package Count" Locale="en-US" Panels="Front
    Back" POAs="P1_30">
      <body>Contains 30 diapers</body>
    </CopyElement>
    <CopyElement ID="CP003" CopyElementType="Package Count" Locale="en-US" Panels="Front
    Back" POAs="P1_40">
      <body>Contains 40 diapers</body>
    </CopyElement>
    <CopyElement ID="CP004" CopyElementType="Package Count" Locale="en-US" Panels="Front
    Back" POAs="P1_50">
      <body>Contains 50 diapers</body>
    </CopyElement>
    <CopyElement ID="CP007" CopyElementType="Package Count" Locale="es-US" Panels="Front
    Back" POAs="P1_50_ES">
```

```

<body>Contiene 50 pañales</body>
</CopyElement>
<CopyElement ID="CP005" CopyElementType="Generic" Locale="en-US" POAs="P1_30 P1_40
P1_50">
  <body>How are you?</body>
</CopyElement>
<CopyElement ID="CP006" CopyElementType="Generic" Locale="es-US" POAs="P1_30 P1_40
P1_50 P1_50_ES">
  <body>Que tal estas?</body>
</CopyElement>
</Copy>

</CopyContent>

```

3.9.6. What is GS1 XML

GS1 is an international non-profit association with member organisations in over 100 countries. GS1 is dedicated to the design and implementation of global standards and solutions to improve the efficiency and visibility of supply and demand chains globally and accross sectors. The GS1 system of standards is the most widely used supply chain standards system in the world.

For more information on GS1 eCom, see <http://www.gs1.org/gsm/kc/ecom>

For more information on the BMS XML standard, see <http://www.gs1.org/gsm/kc/ecom/xml/>

3.10. Glossary

This Glossary gives you an overview of some basic concepts and terminology used in this manual, and what they mean in the specific context of the Dynamic Content plug-in.

Dynamic Object

An Illustrator text object that has been linked to an XML element from an external file by the Dynamic Content plug-in. Dynamic Objects have a number of special characteristics, which makes them behave differently than normal Illustrator text.

IPC

The Intelligent Packaging Consortium (IPC) is an informal workgroup consisting of brand owners, retailers, software vendors, consultants and packaging designers. The IPC workgroup designed the IPC XML Schema, a standard document structure for exchanging data between brand owners and their suppliers.

Node

A node is an item in an XML document's tree structure. Node is a generic term - this means nodes can have different types: XML element nodes, XML attribute nodes, text nodes, ...

XML Attribute

A qualifier on an XML tag that provides additional information. For example, in the tag <slide title="My Slide">, title is an attribute, and My Slide is its value.

XML Element

A unit of XML data, delimited by tags. An XML element can enclose other elements. For example, in the XML structure:

```
<slideshow>
  <slide>..</slide>
  <slide>..</slide>
</slideshow>
```

the <slideshow> element contains two <slide> elements.

XML File

A file with contents in the form of XML markup. XML markup is similar to HTML in that it also uses tags enclosed by angled brackets (example: <element>), but it describes the structure of the data instead of how it should be presented or rendered in a web browser.

XML Schema

A method for specifying the structure to which an XML document needs to adhere. For example, the IPC XML schema specifies that documents should contain a root element <CopyContent>, followed by the child elements <RevisionHistory>, <Project>, <Copy> in this exact order.

4. Dynamic Art

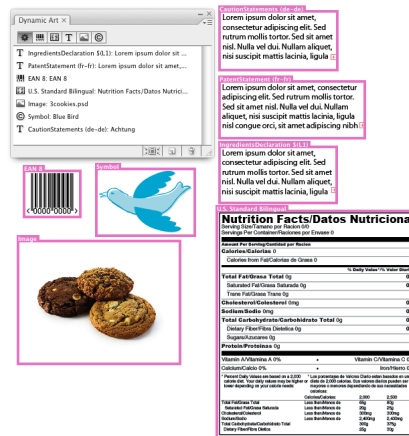
4.1. About the Dynamic Art plug-in

What is “dynamic art”?

The Dynamic Art plug-in allows you to quickly tag the placeholder type objects, table objects and barcodes that you created in your Illustrator design as “Dynamic Art” objects.

Any object that will receive its final textual content at a later stage in the design process, based on the content in an XML file, can be turned into a Dynamic Art object. Empty text objects added to the Dynamic Art palette are automatically filled with dummy text; you cannot have an empty dynamic text object. If you create a text object in Illustrator with your own text, than that text is added to the Dynamic Art palette as soon as you convert it to a dynamic object.

All Dynamic Art objects you create in an Adobe Illustrator document are listed in the Dynamic Art palette.



Dynamic Art objects are saved in the Illustrator document. This allows one designer to define Dynamic Art objects, then pass the file on to other designers. These people can then use the same Dynamic Art objects to link in the final content.

4.2. Why Use Dynamic Art?

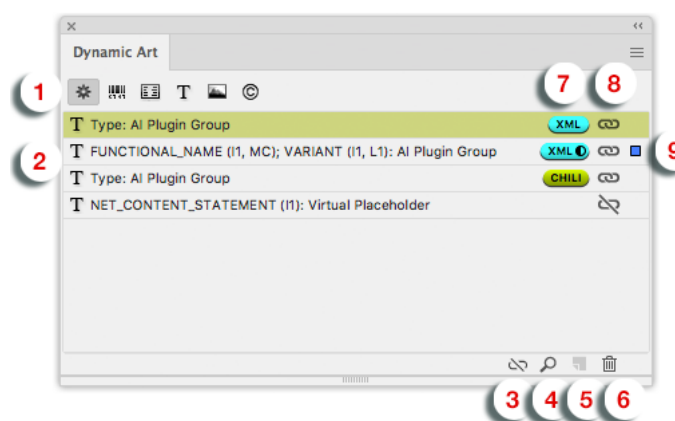
Dynamic Art is used in a Dynamic Content workflow. Dynamic Content is an Esko plug-in for Adobe Illustrator that allows you to link content from an external XML file to objects (type, tables, barcodes, Illustrator symbols, and external images) in the Illustrator document.

The suggested workflow for using Dynamic Art in combination with Dynamic Content is the following:



Phase	Description
1	The designer creates a design in Adobe Illustrator . In the design, dummy or “placeholder” objects are placed where dynamic content will be linked later on in the production process. These objects can be: <ul style="list-style-type: none"> • type objects created with the Illustrator Type tools; • barcodes created with the Esko Dynamic Barcodes plug-in; • nutritional and other tables created with the Esko Dynamic Tables plug-in; • Illustrator symbols; • External images.
2	Once the design is finalized, the designer selects all the placeholder objects and adds them to the Dynamic Art palette.
3	Later in the production process, the brand owner supplies the approved textual content for the design, in the form of an XML file.
4	Using the Esko Dynamic Content plug-in, the designer adds the XML content file to the Illustrator document and Auto Links the content if possible, or links them manually to the corresponding content from the XML file. The file is now ready for final approval and for the next steps in the production process.

4.3. The Dynamic Art Palette

The Dynamic Art palette can be opened by choosing **Window > Esko > Dynamic Art**.



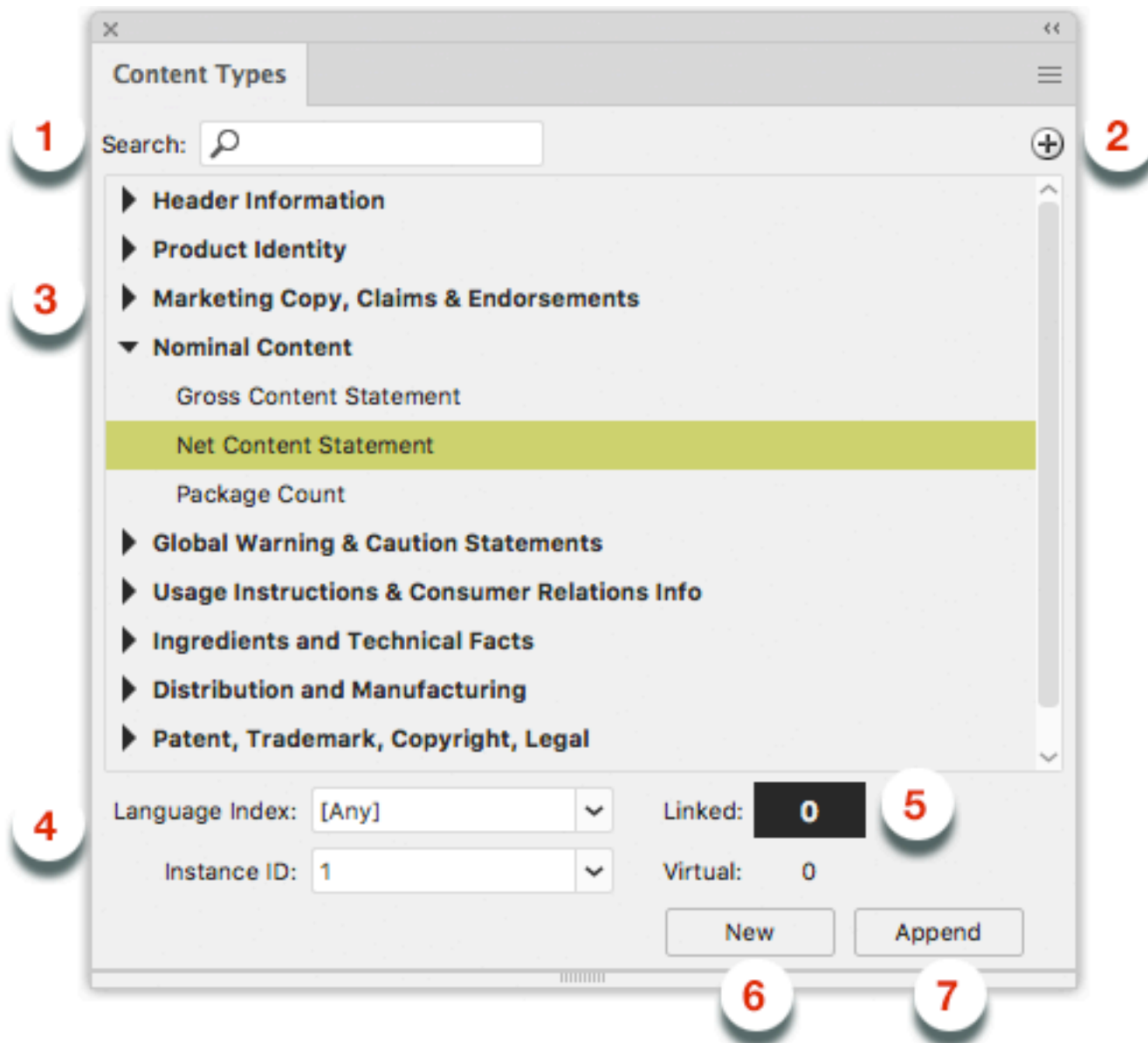
1. Filter buttons: from left to right, these are **Show All Dynamic Art, Show Barcode Art, Show Table Art, Show Type Art, Show Image Art** and **Show Symbol Art**.
2. Dynamic Art list.
3. Unlink Dynamic Art

4. **Select and zoom to object** button.
5. **New Dynamic Art** button.
6. **Delete Dynamic Art** button.
7. **Link indicator** indicates how the placeholder is linked. The color of the symbol represents the color of the XML file used in Dynamic Content.
 - **XML** with a filled circle: all links in the Dynamic Art were applied
 - **XML** with a half-filled circle: some statements in the Dynamic Art were applied when linking to the XML, others were not found in the XML, so they become orphans
 - **XML** without a circle: a placeholder with just a single text statement, already linked to an XML element in Dynamic Content.
 - **CHILI**: the placeholder is linked to a CHILI Package.
8. **Linked Dynamic Art indicator**
 - The Linked icon  indicates the Dynamic Art is linked to a particular object
 - The Unlinked icon  indicates the Dynamic Art is not linked to a particular object, so it's a virtual placeholder.
9. **Selection indicator**: a colored dot indicates the object linked to the Dynamic Art is selected in your Adobe Illustrator document. You can also click the location of the Selection indicator to select the corresponding objects, when possible.

Tip: You can drag and drop items within the palette in **Show All Dynamic Art** view, to keep them in a logical order (not connected to the order in the Layer palette). When exported to and opened in CHILI, the text placeholders will be shown in the order set in the Dynamic Art palette.

4.4. The Content Types palette

The Content Types palette can be opened by choosing **Window > Esko > Dynamic Art > Content Types**.



- 1. Search:** typing into the Search field reduces the list of Copy Element Types to those containing the entered string.
- 2. Filters:** Clicking the + button, you can add optional filters to reduce the Copy Element Types shown in the list. Each filter can be enabled or disabled using the checkbox.
- 3. Copy Element Types list.** A list of Copy Element Types (reduced by the Search and the Filters) from which you can select the desired items to assemble the Dynamic Art.
- 4.** Use the **Language Index** and **Instance** dropdown to define the Language definition of the future Dynamic Art and its Instance ID. Those values will be used with the selected Copy Element Types to assemble the Dynamic Art.
- 5.** The **Number of Occurrences** indicates how many times the selected GS1 Copy Element with the specific Language Index and Instance ID is defined within Dynamic Art, regardless if it's linked to an Adobe Illustrator object or not.

6. **New**: if no artwork is selected, the **New** button will add the Copy Element Type to the **Dynamic Art** list as a virtual placeholder. If an object is selected, the Copy Element Type is added to the **Dynamic Art** list, and the selected object is converted to the Dynamic Art
7. If a Dynamic Art is selected in the Dynamic Art palette, the **Append** button in the Content Types palette can be used to add the selected Copy Element Type with selected Language and Instance ID to this Dynamic Art.

From the fly-out menu of the Content Types palette you can open the Dynamic Art Preferences. See [Dynamic Art Preferences](#) on page 114

4.5. Dynamic Art on the Canvas

By default, Dynamic Art highlights the Dynamic Art objects on the Illustrator canvas that you have added to the Dynamic Art palette. The highlight takes the form of a colored box around the object, with a heading that represents the type of object, and that provides further information such as intended content locale and instance.

4.6. Working with Dynamic Art

4.6.1. Create a Dynamic Art Object

If it is not yet visible, choose **Window > Esko > Dynamic Art > Dynamic Art** to display the Dynamic Art palette, or **Window > Esko > Dynamic Art > Content Types** to open the Content Types palette.

- To create a linked object directly:
 - a) On the Illustrator canvas, select the object you want to add as a Dynamic Art object.
 - b) Click the **New Dynamic Art** button at the bottom of the palette.

The object is converted into a Dynamic Art object: it is listed in the **Dynamic Art** palette, and it is highlighted on the canvas.
- To create a linked object using the Content Types palette:
 - a) On the Illustrator canvas, select the object you want to add as a Dynamic Art object.
 - b) In the **Content Types** palette, select one or more Content Element Types.
 - c) Select the Language Index and Instance ID
 - d) Click the **New** button.




The object is converted into a Dynamic Art object: it is listed in the **Dynamic Art** palette, and it is highlighted on the canvas.

Note: If the Content Type is applied on objects other than text objects, only the selected Instance ID is applied.

- To create a Virtual placeholder:
 - a) In the **Content Types** palette, select one or more Content Element Types.
 - b) Select the Language Index and Instance ID
 - c) Click the **New** button.

A new Virtual placeholder is created, containing the XML attributes with parameters defined by the selection, so one or more Copy Element Types with the common Locale and Instance definition.

Note: If no Content Type is selected, you will be able to decide what type of Dynamic Art should be created: Text, Barcode, Table, Symbol or Image. A Virtual placeholder of the selected type and Instance ID is created.

- To link a Virtual placeholder to an object:
 - a) On the Illustrator canvas, select the object you want to convert to a Dynamic Art object.
 - b) In the Dynamic Art palette, select a Virtual placeholder and click the Unlinked icon . The object becomes a linked Dynamic Art and the Virtual placeholder changes to a linked Dynamic Art with the same XML attributes and parameters.
- To unlink Dynamic Art from an object:
 - a) Select a Dynamic Art in the Dynamic Art palette
 - b) Click the **Unlink** button  at the bottom of the palette, or double-click the Linked icon . The linked object loses its link to the Dynamic Art and becomes a regular object. The Dynamic Art stays in the list as a Virtual placeholder.
- To add XML attributes to the Dynamic Art:
 - a) Select a Dynamic Art in the Dynamic Art palette, either Linked or Virtual.
 - b) In the **Content Types** palette, select one or more Content Element Types.
 - c) Select the Language Index and Instance ID
 - d) Click the **Append** button. The selected XML attributes will be appended to the Dynamic Art.

4.6.2. Viewing and Navigating to Dynamic Art

Dynamic Art provides more than just a list of Dynamic Art objects. You can:

- Select a specific Dynamic Art object in the document by clicking to the right of its entry in the **Dynamic Art** palette, similar to how you select an Illustrator layer in the **Layers** palette.
- Select a specific Dynamic Art object in the Dynamic Art palette and zoom to it by clicking the **Select and zoom to object** button at the bottom of the **Dynamic Art** palette.
- Filter the list of placeholder objects in the Dynamic Art palette by clicking the appropriate filter button at the top of the palette:
 - **Show Barcode Art**
 - **Show Table Art**
 - **Show Type Art**
 - **Show Image Art**

- **Show Symbol Art**

4.6.3. Fill Type Objects with Dummy Text

To fill an existing Dynamic Art type object with Lorem Ipsum text, select the object in the **Dynamic Art** palette and choose **Fill with Dummy Text** from the fly-out menu. New empty type objects automatically get filled with Lorem Ipsum text when you make them Dynamic Art objects.

4.6.4. Edit and Delete Dynamic Art Objects

- To **rename** a Dynamic Art object, select it and do one of the following:
 - double-click its entry in the **Dynamic Art** palette. Type a new name and click **OK**.
 - choose **Properties** from the fly-out menu. Type a new name and click **OK**.

Note: This only changes the name of the object in the **Dynamic Art** palette. It does not affect the text content of the object in the Illustrator document or the label name of the highlight canvas.

- To **delete** a Dynamic Art object, select the object in the **Dynamic Art** palette and either:
 - choose **Delete** from the fly-out menu; or
 - click the **Delete** button at the bottom of the palette.

Note: This only deletes the Dynamic Art object. The original type, barcode or table object on the Illustrator canvas is not removed.

4.6.5. Define Properties for Type Art

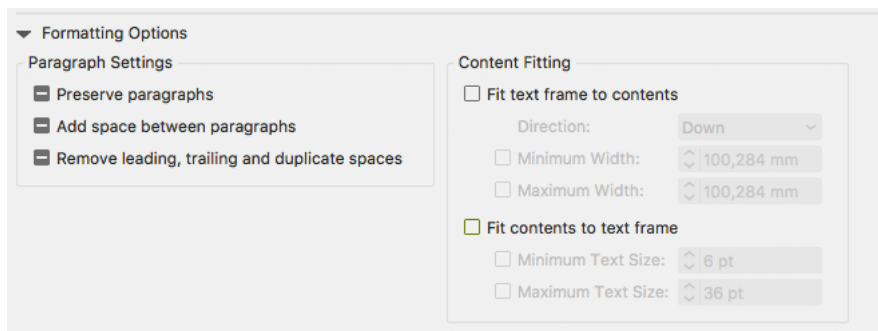
For type objects that have been added to the **Dynamic Art** palette, you can provide some additional properties.

To change the properties:

1. Double-click the type object in the Dynamic Art palette, or select the entry and choose Properties from the fly-out menu.
2. Set the Attributes. The parameters are divided in different groups:
 - 1. Formatting options. See [Formatting Options](#) on page 111.
 - 2. The list of **Text Statements**. See [The Text Statements list](#) on page 112
 - 3. For every Text Statement in the list, you can set the **Statement Settings**. See [XML Parameters](#) on page 112
 - 4. CHILI Publisher parameters. For more information on the CHILI settings, we refer to the CHILI documentation. These are only visible if the **CHILI Publisher** option is enabled in the Preferences. See [Dynamic Art Preferences](#) on page 114.
 - 5. Videojet Marking. See [Videojet Marking](#) on page 113. These are only visible if the **Videojet Marking** option is enabled in the Preferences. See [Dynamic Art Preferences](#) on page 114.
3. Click **OK**

Formatting Options

In the **Formatting options**, you can set some formatting options, and set automatic modification of the Dynamic Object size or the text size within the Dynamic Object.



Paragraph Settings

In the Paragraph settings you can set

- if paragraphs should be preserved in the XML
- to add a space in between links
- if you want to remove whitespaces from the XML

Fit Text Frame to Contents

If you use **Fit Text Frame to Contents**, the text box will grow to fit the actual text content, coming from the XML source. The text box size will be adapted every time the XML source changes.

This option is useful when you're not sure what amount of text will come from the XML, and you want to avoid text overflow.

- The **Direction** defines in what direction the text box can grow: down, up, to the left or to the right.
- Using **Minimum Height** and **Maximum Height** (or width, depending on the direction) you can define the minimum and maximum size for the text box.

Note: This option is only available for Area Text objects, so not for Text on Point or Text on Path

Fit Contents to Text Frame

If you use **Fit Contents to Text Frame**, the font size will change to fit the text frame.

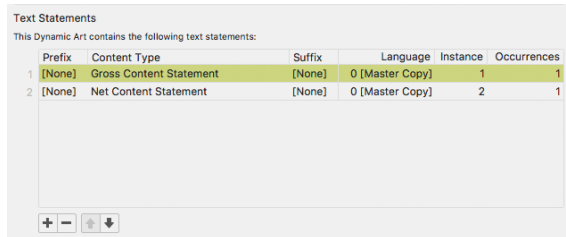
This option is useful when the space for the text is limited, and font size changes are allowed by the design rules.

- The **Minimum Text Size** and **Maximum Text Size** define the minimum and maximum font size to be used.

Note: This option is only available for Area Text objects and Text on Path, so not for Text on Point.

The Text Statements list

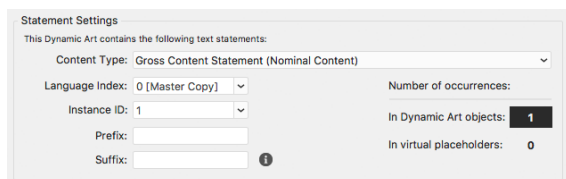
In the **Text Statements** list you define the text statements you want to use in the selected Dynamic Art



- Add a Text Statement by clicking the + button.
- Remove a Text Statement by clicking the - button.
- Change the order of the Text Statements by clicking the arrow buttons
- Select a Text Statement in the list to change its settings underneath. See [XML Parameters](#) on page 112

XML Parameters

For every Text Statement in the list, you can set the Statement Settings.



If you set these properties, **Dynamic Content** will filter the list of available elements to only show the matching elements, further simplifying the task of the person linking the Dynamic Art objects to the XML content.

Dynamic Art will also provide the **Auto link** feature, allowing the automatic filling of Dynamic Art placeholders with matching GS1 or IPC XML content.

Note: In the Preferences, you can choose between the GS1 standard or the IPC standard. You can also apply Custom CET files. Depending on these settings, the dialog will look differently. See [Dynamic Art Preferences](#) on page 114

1. Define the GS1 or IPC XML **Content Type** from a file that should be linked to this type object
2. Define the language for use in multilingual GS1 or IPC files
 - For the IPC XML standard workflow, define the locale (for example "en-us" for US English) of the object or the Locale Variable. See also [Use Locale Variables for Type Elements \(IPC XML standard only\)](#) on page 113
 - For the GS1 XML standard, define the Language Index. Language Index represents the GS1 localeSequence tag, whose mapping is defined in the header of the GS1 XML.
3. For the GS1 XML standard, define the **Instance ID**, which is used for differentiating multiple objects of the same content type.

For example, the GS1 XML file can hold the content of the "MARKETING_CLAIM" type in the short and in the long variant, one for the front package panel, the second for the side panel, and these

elements then have the same content type (Marketing claim) defined but different Instance ID (GS1 tag instanceSequence). This unique identification is crucial for further Automatic linking in **Dynamic Content** and is one of the main advantages of the GS1 XML standard.

4. Set the Prefix and Suffix

This allows you to add static text, line brakes, etc. in between Text Statements.

- 5.** The palette will give an indication of how many times the Content Type has been used in your document in **Linked** Dynamic Art, and in **Virtual** placeholders (i.e. not linked to an actual object in your document).

Use Locale Variables for Type Elements (IPC XML standard only)

If you are creating multi-region products, instead of assigning a specific locale to text objects, you can assign locale variables. This way, when you link an multilingual XML content file in Dynamic Content, the proper language is applied to the text objects.

- 1.** In the Dynamic Art palette, select the type objects to assign a locale variable to and choose **Properties** from the fly-out menu.
- 2.** In the **Dynamic Art Options** dialog box, choose the appropriate **Content Type** for the data in the XML content file.
- 3.** Select **Assign a specific locale** if you want to assign a specific language and country, or select **Assign a locale variable** and enter a variable name (such as L1) in the appropriate field.
- 4.** Click **OK**.
- 5.** Repeat steps 1 to 4 for objects that will be in other languages, using different languages, or different variables such as L2 and L3.
- 6.** You can now use Dynamic Content to map the locale variables, add the XML content file, and Auto Link so that the type objects are filled automatically with the correct text. See the *Dynamic Content User Guide* for more information.

Videojet Marking

Using **Videojet Marking** you can export Dynamic Art placeholders to a specific ZPL (Zebra label printer) format. All Dynamic Art objects can be tagged to become either **Static**, **Dynamic Text** or **Dynamic Date** when exporting the ZPL file.

To create the ZPL file, choose **Videojet Export** in the fly-out menu. All non-text Dynamic Art placeholders will be exported as PNG images besides the ZPL file.

4.7. Export XML Template

The **Export XML Template** can be found in the fly-out menu of the Dynamic Art Panel.

This feature collects information of Dynamic Art text objects. The following will be collected from Dynamic Art:

- Locale ID (GS1) or Locale / Locale Variable (IPC)
- CopyContent type
- Text content
- Barcode values

- Paths to linked images
- Symbol/Symbol Library names

Then the XML file is exported, in the format specified by the XML standard (GS1 or IPC) set in the **Preferences**. In the XML file, each Dynamic Art text object will be represented by the proper content elements according to the selected XML standard schema.

Note: When exporting to IPC, the path to linked images and references to symbols are not included in the XML file.

This XML Template file can be easily used as a template for future filling by the real content.

4.8. Saving and Loading Dynamic Art Sets

If multiple similar documents need to have the same set of Dynamic Art, you can use a **Dynamic Art Set**.

You can set the Dynamic Art on the first document, and then save the Dynamic Art Set. On the second document, you can then load the Dynamic Art set, so the Dynamic Art palette is filled with Virtual placeholders using the same settings as in the first document. You can then easily link those to artwork objects instead of defining them from scratch.

- From the fly-out menu of the Dynamic Art palette, select **Save Dynamic Art Set** to save all Dynamic Art from the list, including all their parameters, in an XML file.
- From the fly-out menu of the Dynamic Art palette, select **Load Dynamic Art Set** to load all Dynamic Art saved in an XML file.

If your document already contains Dynamic Art, you will be asked if you want to replace or extend the existing Dynamic Arts

- Select **Replace** to remove the existing Dynamic Art before loading the Dynamic Art Set
- Select **Extend** to append the Dynamic Art Set after the existing Dynamic Art.

4.9. Dynamic Art Preferences

You can open the Dynamic Art Preferences by choosing **Illustrator > Preferences > Esko > Dynamic Art Preferences**

You can choose if you want to see the **CHILI Publisher** or **Videojet Marking** options in the Dynamic Art Options palette. See [Define Properties for Type Art](#) on page 110

The **XML Standard** option determines the default behavior related to the XML standards. If the GS1 standard is selected (default option), the Dynamic Art Options dialog allows entering the GS1 XML specific parameters and the **Export XML Template** exports an XML file valid against the GS1 XML schema. The IPC option changes the behavior to let these options and files conform with the IPC XML schema. See [Define Properties for Type Art](#) on page 110

Always save links to resources into XMP and XML Template Using Absolute Paths: If this option is on, links to sources (the XML file loaded in Dynamic Content, and image resources) will be saved as **absolute** paths when saving XMP or XML Template.

If the option is off, paths are saved **relative** to the Adobe Illustrator document.

The values set in **Default Language Index** and **Default Instance ID** will be used as default when creating a new Dynamic Art link definition, both for virtual placeholders as for Dynamic Art based on a text box.

Note: Changes in the **Default Language Index** and **Default Instance ID** only take effect after restarting Adobe Illustrator.

Custom CET Files

If no Custom CET Folder is defined, the Content Types are used from the default CET file, included when installing Dynamic Art.

If the Custom CET Folder contains Custom CET Files, the Content Types from the Custom CET Files are shown, as well as the default Content Types.

If you enable **Use Only Custom CET Files**, the default Content Types are no longer shown, only those defined in the Custom CET Files.

5. Dynamic Barcodes

5.1. What is a barcode ?

A barcode is a machine-readable representation of information in a visual format on a surface. Barcodes can be read by optical scanners, allowing quick and easy identification of all kind of goods.

Originally barcodes stored data in the widths and spacings of printed parallel lines, but today they also come in patterns of dots, concentric circles, and hidden in images.

The information contained in a barcode varies from numbers to complete ASCII texts. The drive to encode ever more information in combination with the space requirements of simple barcodes led to the development of matrix barcodes or 2D barcode, which do not consist of bars but rather a grid of square cells.

Barcodes are just the visible part of often quite large systems frequently referred to as automated identification systems. These systems are increasingly proving to be some of the most cost-effective management tools, since they enable organizations to keep track of their goods and stocks in all kinds of situations in a fast, accurate and efficient way.

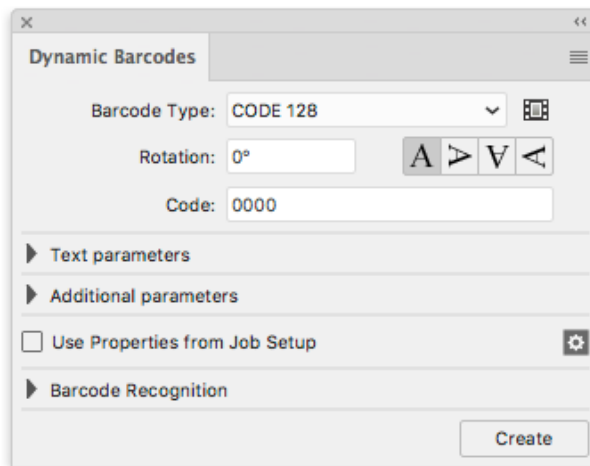
With the Dynamic Barcodes plug-in, you can add a dynamic barcode to your document without leaving your application. Dynamic means that your barcode settings can be changed later on, even after you saved, closed and reopened your document.

5.2. Getting Started with Dynamic Barcodes

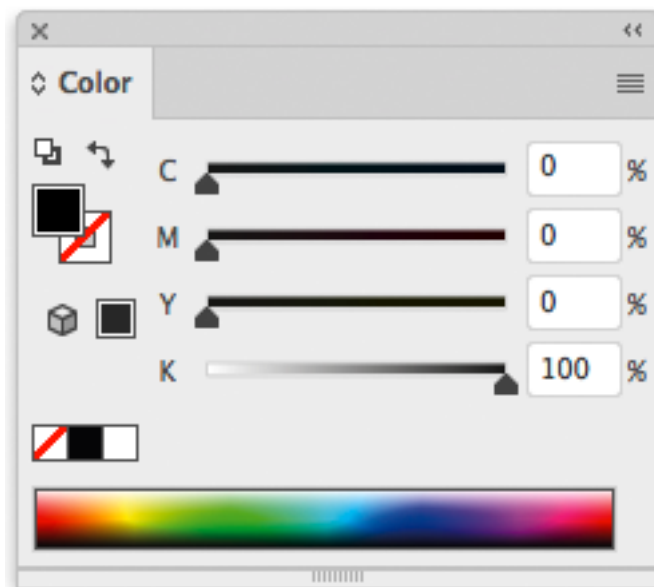
To introduce you to Dynamic Barcodes, here is how to make your first barcode in four simple steps.

1. Create a CMYK Illustrator document and go to **Windows > Esko > Dynamic Barcodes**.

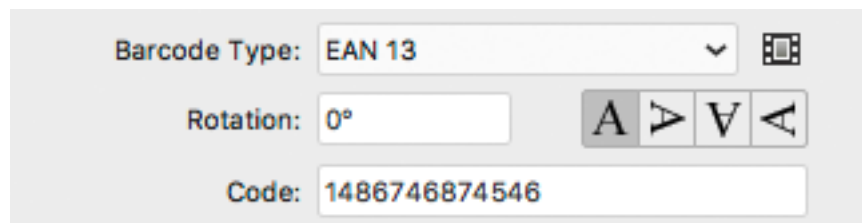
This opens the **Dynamic Barcodes** dialog.



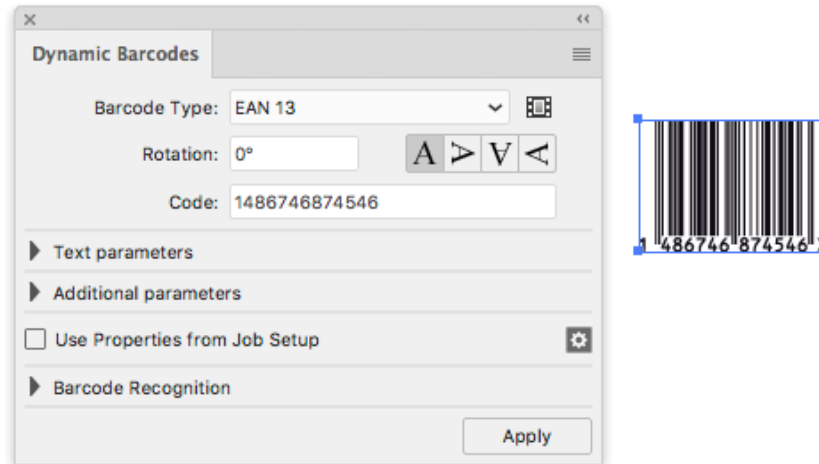
2. Define the color of the barcode: in your Illustrator color palette, define a single-color fill style and no stroke.



3. Enter the barcode parameters (**Barcode Type**, numeric **Code**...) in the **Dynamic Barcodes** dialog. For example, for an EAN 13 barcode, select **EAN 13** as **Barcode Type** and enter a 13 digit **Code**.



4. Click the **Create** button and Dynamic Barcodes will generate the barcode in your document.



5.3. Using Dynamic Barcodes in Unlicensed Mode

If you don't have a license for the Dynamic Barcodes plug-in, you still use it in unlicensed mode to perform limited operations. You can:

- Open documents containing barcodes created by Dynamic Barcodes without warning messages.
- Create barcode placeholders (with no data in them) in your design.

See [Creating a Barcode Placeholder Quickly](#) on page 124.

You can also use the regular Illustrator functions to:

- change the barcode's position in your document,
- rotate it by multiples of 90 degrees (using **Object > Transform > Rotate**),

Tip: You can rotate several barcodes at once.

- change its fill color (it is not possible to apply a stroke),



Attention:

Choose a fill color that is:

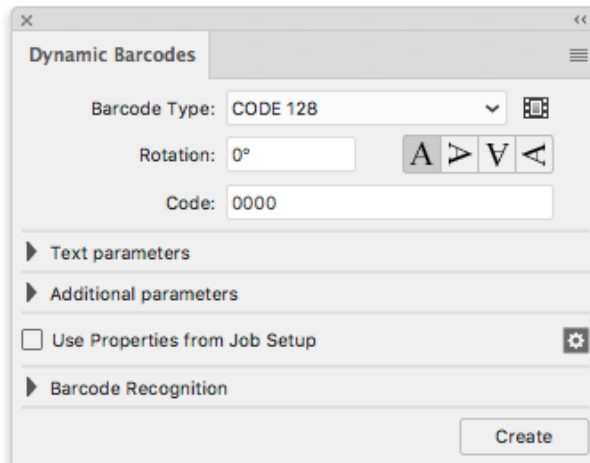
- a process or a spot color (other colors might generate trapping problems),
- not too light (or the barcode might be difficult to scan).

- copy and paste it.
- delete it.

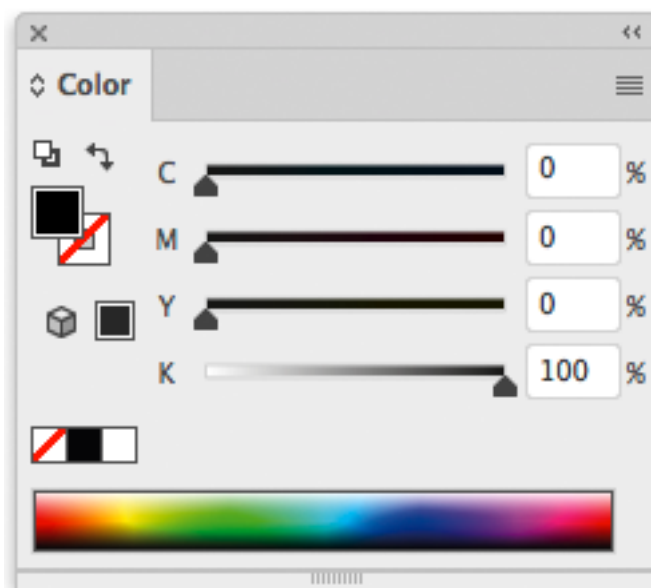
5.4. Dynamic Barcodes Basics

5.4.1. Creating a Barcode

1. Create a CMYK Illustrator document and go to **Windows > Esko > Dynamic Barcodes**.
 You can also use the **Command + Option + 4** shortcut on Mac, or the **CTRL + Alt + 4** shortcut on PC.
 This opens the **Dynamic Barcodes** dialog.



2. Define the color of the barcode: in your Illustrator color palette, define a single-color fill style and no stroke.
 Dynamic Barcodes creates bars by generating rectangular objects and assigning the current fill style to them.





Attention:

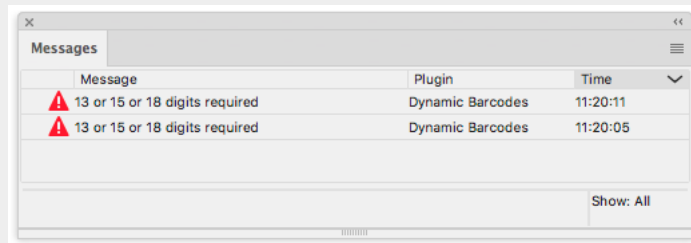
Choose a fill color that is:

- a process or a spot color (other colors might generate trapping problems),
- not too light (or the barcode might be difficult to scan).

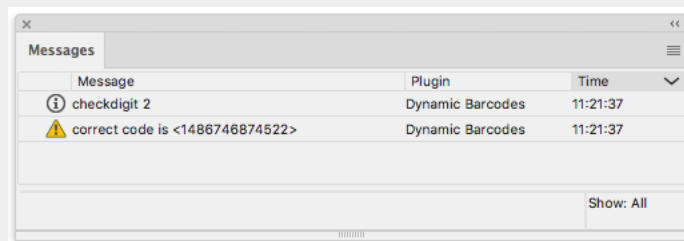
3. In the **Dynamic Barcodes** dialog, select your **Barcode Type**.
4. Enter a **Rotation** angle for your barcode, or use one of the rotation buttons. Choose the **Orientation** of your barcode using one of the buttons or by entering an angle.
5. Enter the barcode's data in the **Code** field. For most barcodes, you can choose to also show this data as a (human-readable) number.



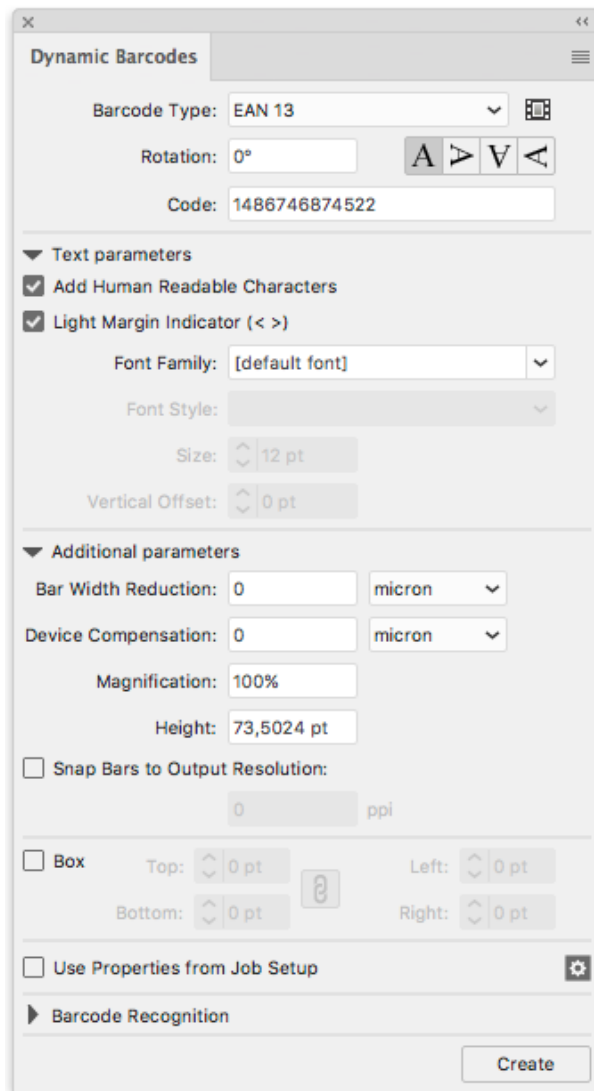
Attention: Make sure the barcode data you enter is valid for the barcode type you chose. If it isn't, a warning / error will pop up.



Note: If you enter a wrong check digit, Dynamic Barcodes can fix it automatically for you.



6. To fill in other parameters specific to the barcode type you chose, open the **Additional parameters** section and see [Barcode Types](#) on page 144.



7. Click the **Create** button.

- If you have the boostX plug-in installed, Dynamic Barcodes generates your barcode at the intersection of the boostX crosshair.
- If you don't have the boostX plug-in installed, Dynamic Barcodes generates your barcode in the center of the view.



5.4.2. Editing a Barcode

With Dynamic Barcodes, you can also edit existing barcodes.

1. Open the **Dynamic Barcodes**.
2. Select the barcode to edit in your Illustrator document.
3. Change its parameters as you wish in the **Dynamic Barcodes** dialog.

Note:

If you change the **Barcode Type** and the previous **Code** is not valid for this barcode type, Dynamic Barcodes will reset it to the (first) default code for this barcode type.


This is the default code used for placeholder barcodes; you can see it in the preset barcodes dialog (see [Previewing and Creating a Barcode Placeholder](#) on page 125).

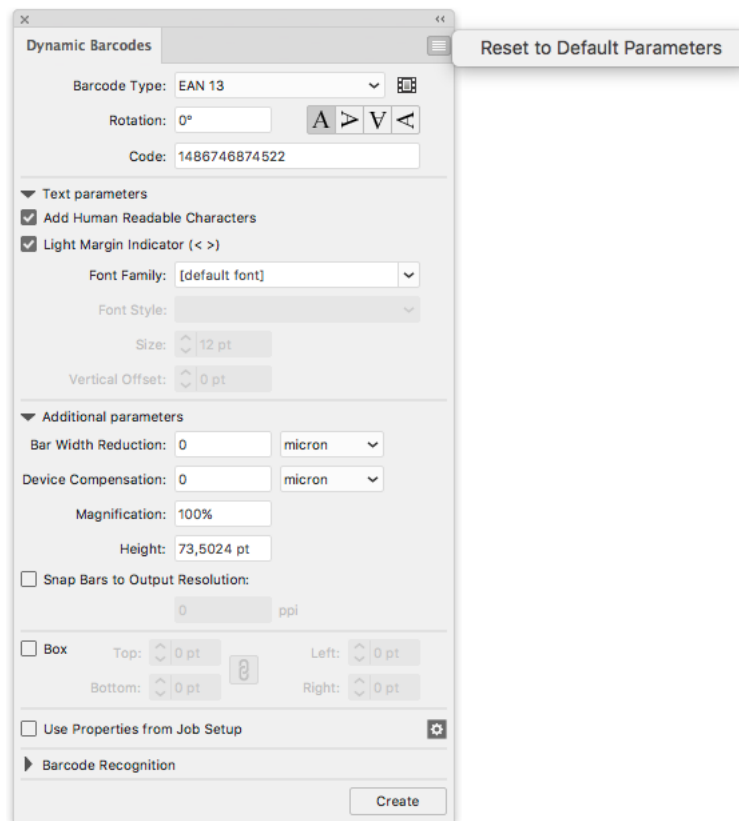
You can then either:

- enter your own valid code,
- use this default code to create a placeholder barcode (see [Creating a Barcode Placeholder Quickly](#) on page 124).

4. Click the **Apply** button to apply your changes to the barcode.

5.4.3. Setting Barcode Parameters to Default

- To reset all the parameters of the selected barcode to default, click the palette menu  in the top right corner of the **Dynamic Barcodes** dialog then click **Set Default Parameters**.



Note: The **Bar Width Reduction**, **Device Compensation** and **Snap Bars to Output Resolution** parameters are not reverted to the defaults, since these parameters are related to the press settings, and not related to the selected barcode.

5.4.4. Barcode Placeholders

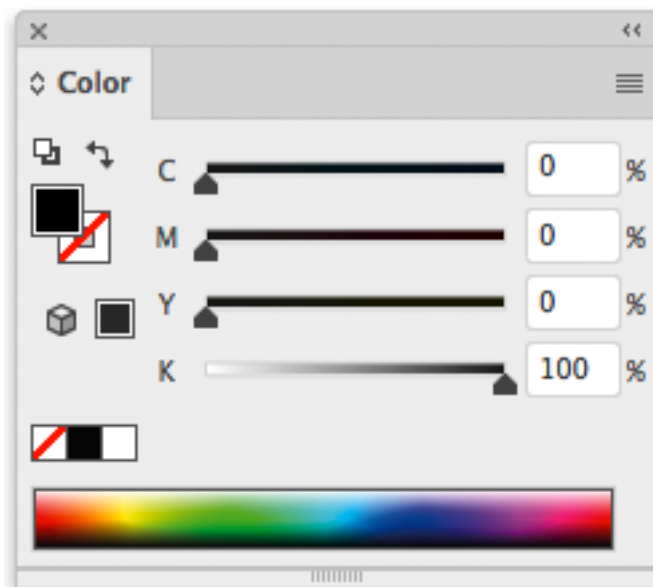
If you don't have the exact data to encode in your barcode yet, you can already create a barcode placeholder in your design.

This placeholder will have the correct symbol type for the barcode type you choose, but will only contain "empty" or "default" data (for example 000000000000 for EAN 13).



Creating a Barcode Placeholder Quickly

1. Open the **Dynamic Barcodes** dialog from **Windows > Esko > Dynamic Barcodes**.
2. Define the color of the barcode: in your Illustrator color palette, define a single-color fill style and no stroke.



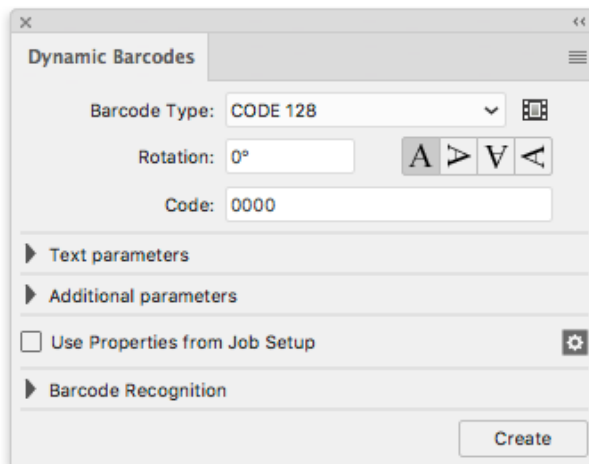
Attention:

Choose a fill color that is:

- a process or a spot color (other colors might generate trapping problems),
- not too light (or the barcode might be difficult to scan).

3. In the **Dynamic Barcodes** dialog, select your **Barcode Type**.

The **Code** field is automatically filled out with a nul / default value that has the correct number of digits for your **Barcode Type** (for example 0000000000000 for EAN 13).



4. Click the **Create** button to create your barcode placeholder.

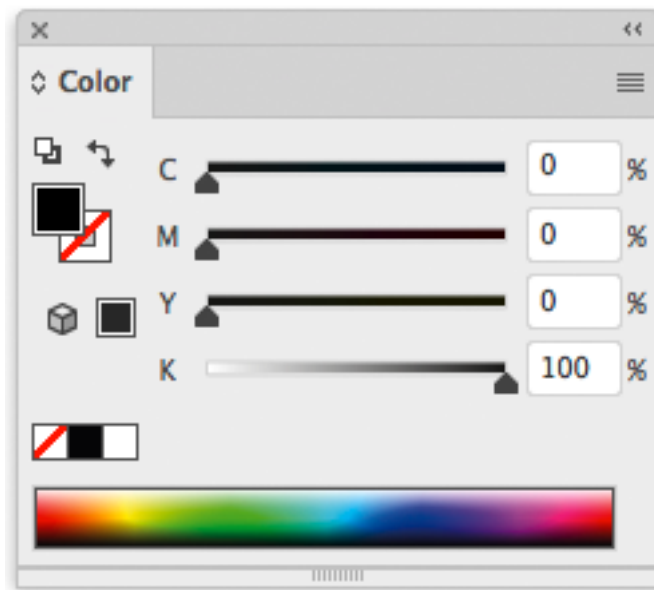


Note: You can also create a barcode placeholder in unlicensed mode (see [Using Dynamic Barcodes in Unlicensed Mode](#) on page 118).

Previewing and Creating a Barcode Placeholder

You can use Dynamic Barcodes to preview different barcode types before creating your barcode placeholder.

1. Open the **Dynamic Barcodes** dialog from **Window > Esko > Dynamic Barcodes**.
2. Define the color of the barcode: in your Illustrator color palette, define a single-color fill style and no stroke.



Attention:

Choose a fill color that is:

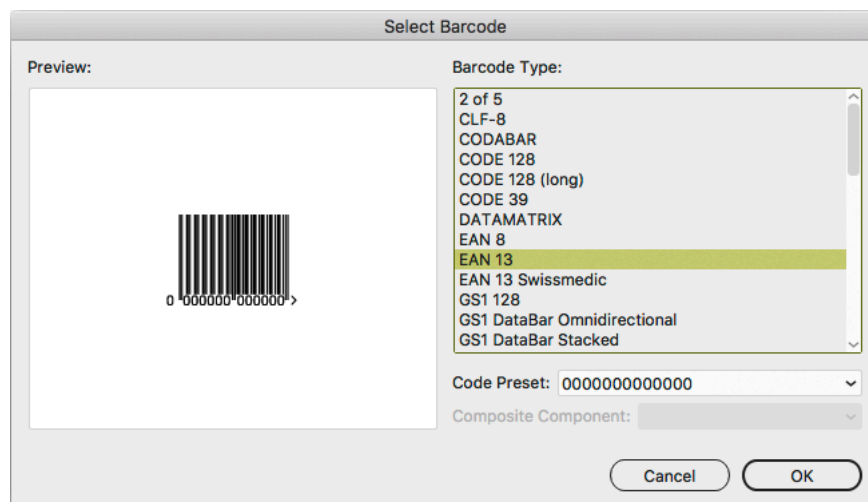
- a process or a spot color (other colors might generate trapping problems),
- not too light (or the barcode might be difficult to scan).

3.



In the **Dynamic Barcodes** dialog, click the Pre-set barcodes icon

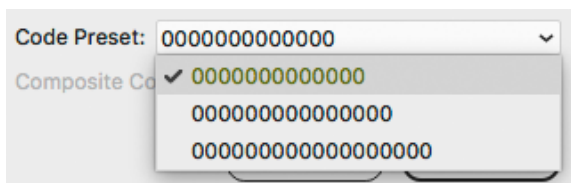
This opens the **Select Barcode** dialog.



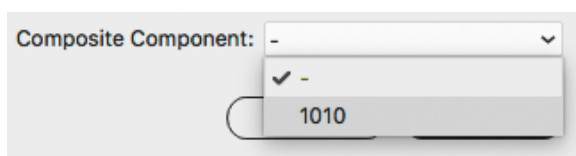
4. Select your **Barcode Type** on the right to see a **Preview** of it on the left.

Note: This shows previews of barcode placeholders. Your actual barcode (with data and specific parameters affecting its size) may look slightly different. For more information on barcode parameters, see [Barcode Types](#) on page 144.

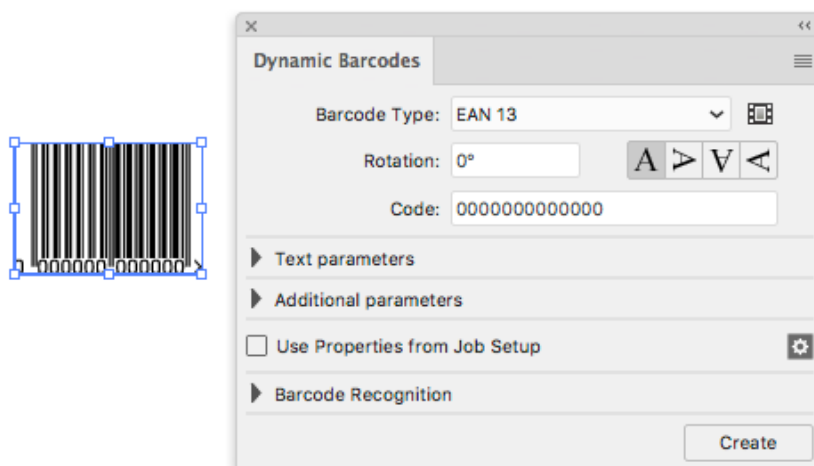
- If your barcode data can have several possible lengths (for example EAN 13 can have 13, 15 or 18 digits), choose the length you want to preview in **Code Preset**.



- If your barcode can have a **Composite Component** (some GS1 barcodes), you can choose to preview it with or without that component.



- Click **OK** to use the preview parameters (**Barcode Type**, **Code Preset** and **Composite Component** as applicable) in the **Dynamic Barcodes** dialog and close the **Select Barcode** dialog.
- In the **Dynamic Barcodes** dialog, click the **Create** button to create your barcode placeholder.



5.4.5. Expand

By using the **Expand** function, you can replace a barcode by regular objects (rectangles, text, ...) in a group, without any barcode information.

Note: Adobe Illustrator also contains an "Expand" function. However, since this does not remove the barcode metadata, the barcode remains editable.

1. Select the barcode you want to expand
2. From the fly-out menu of the Dynamic Barcodes panel, select **Expand**

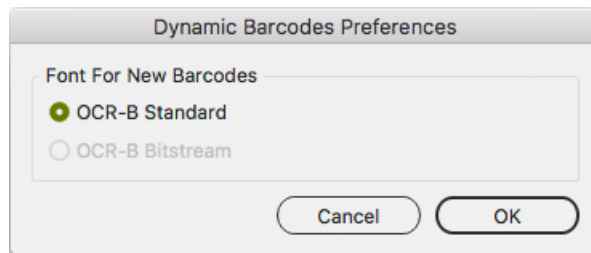
Note: Barcodes used by Dynamic Marks and Dynamic VDP can't be expanded.

5.5. Dynamic Barcodes Advanced



5.5.1. Choosing a Font Standard

You can choose between two font standards for the human-readable characters of your barcodes.

1. Go to **Illustrator > Preferences > Esko > Dynamic Barcodes Preferences...** to open the **Dynamic Barcodes Preferences** dialog.



2. Choose either **OCR-B Standard** or **OCR-B Bitstream** and click **OK**.

<p>OCR-B Standard fonts are rounder and typically used in the Western market.</p>	
<p>OCR-B Bitstream fonts are typically used in the Asian market.</p>	

Note: If the OCR-B Bitstream font is not installed on your system, the option will be disabled. Esko does not provide this font.

5.5.2. Using Dynamic Content with Dynamic Barcodes

You can use the **Dynamic Content** plug-in to turn barcodes created with Dynamic Barcodes into XML-driven objects. These barcodes update automatically when the XML files to which they are linked change.

For more information, see the Dynamic Content documentation.

5.5.3. Barcode Protection

Once you create a barcode with Dynamic Barcodes, this barcode is protected. This means that it won't be possible to edit it with most regular Illustrator tools. This protects the barcode against modifications that might render it invalid, for example distorting it or modifying its size.

The only transformation allowed is moving or rotating the barcode. When rotating the barcode, a message is shown in the Messages palette, and the barcode's Rotation parameter is adapted accordingly.

You can still edit the barcode's parameters at any time through the **Dynamic Barcodes** dialog.

Protecting a Barcode

You can protect a Dynamic Barcodes barcode that has been unprotected, or a barcode made in a previous version of Dynamic Barcodes.

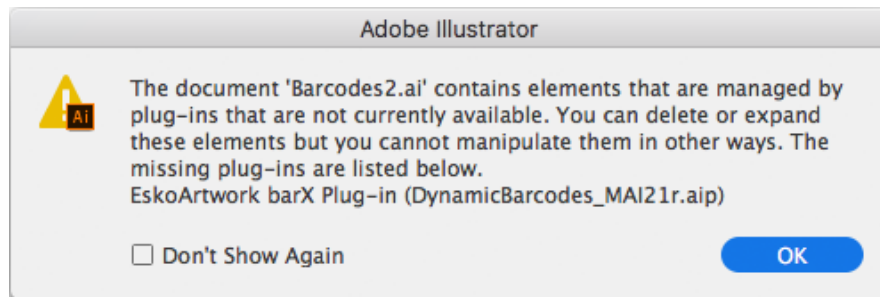
1. Open the Dynamic Barcodes plug-in.
2. Select the barcode to protect in your Illustrator document.
3. If necessary, change its parameters in the **Dynamic Barcodes** dialog.
4. Click the **Apply** button to apply the parameter changes and protect your barcode.

Tip: You can use this to fix some invalid barcodes.

Handling a Barcode without Dynamic Barcodes

Opening a Document Containing a Dynamic Barcodes Barcode without Dynamic Barcodes

When opening a document containing a Dynamic Barcodes barcode in an Illustrator application that doesn't have the Dynamic Barcodes plug-in, you will get the following warning:



This **doesn't create any problem in your file**, and you can continue to work with this file as you normally would, without editing the Dynamic Barcodes barcode.

If you need to edit the Dynamic Barcodes barcode with your Illustrator application, see [Editing a Document Containing a Dynamic Barcodes Barcode without Dynamic Barcodes](#) on page 130.

Editing a Document Containing a Dynamic Barcodes Barcode without Dynamic Barcodes

If you don't have the Dynamic Barcodes plug-in, you can still use Illustrator to do the following operations without rendering your barcode invalid.

If you don't have Dynamic Barcodes installed, you will **not** be able to

- move or scale the object using the Selection tool
- move or distort it (reflect, shear or scale)
- change a color

You will be able to

- expand the bar code
- Rotate by Selection or Free transform - this can lead to inconsistent results so we recommend not doing this.
- move, rotate and distort by the Transform Each command - this can lead to inconsistent results so we recommend not doing this.
- enclose it in the Envelope and distort
- delete it
- copy and paste it

If the Dynamic Barcode plugin is installed, but without a valid license, you will be able to do everything that is allowed by the plugin, except modifying the content. This means for example moving and rotating is allowed, but due to the bar code protection, any potentially dangerous operations such as scale, reflect or shear are not allowed. You will also be able to change the color of the bar code.

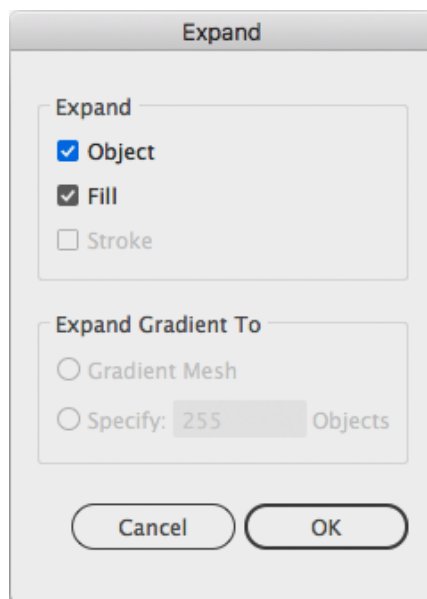
Unprotecting a Dynamic Barcodes Barcode for Further Editing

You can expand your Dynamic Barcodes barcode to a regular Illustrator group art to be able to edit it further, but this is not recommended as it will **remove the barcode's protection**.



Attention: It will then be possible to make modifications that **might render the barcode invalid**.

1. To do this, go to **Object > Expand...** in the Illustrator menu.
2. Choose the object's characteristics to expand, then click **OK**.



This turns your barcode into a regular Illustrator object. You can now for example edit each bar of the barcode individually.

5.5.4. Exporting Documents with Barcodes

If you are using other Esko applications, you can export Illustrator documents containing barcodes to the Esko Normalized PDF format, preserving the barcodes' information and editability.

Viewing Barcode Information in Other Esko Applications

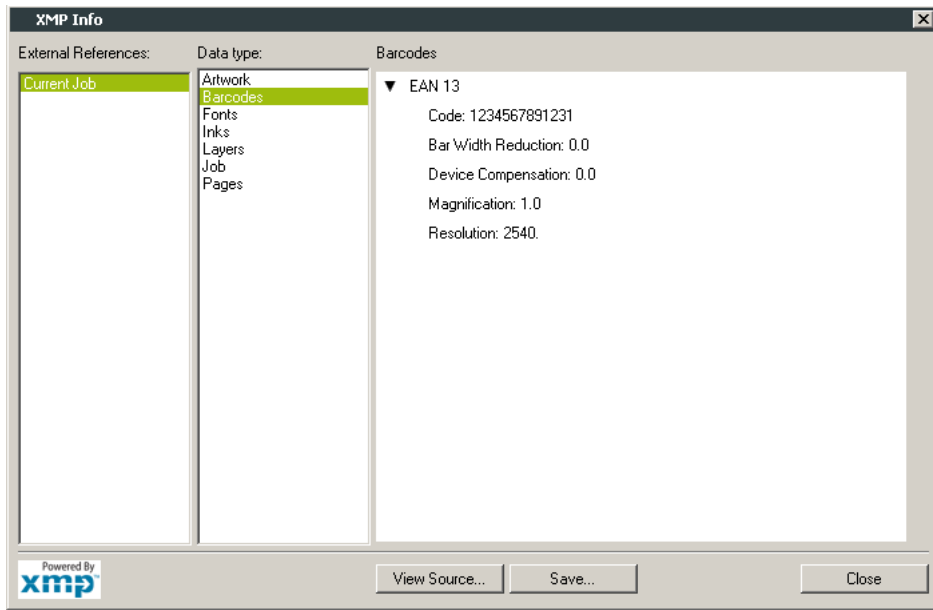
1. Export your Illustrator document to the Esko Normalized PDF format:
 - If you have Automation Engine, use **Shuttle** to launch the document into your chosen workflow. This converts it to Normalized PDF automatically.

Note: See the Adobe Illustrator Client documentation for setup information.

- If you don't have Automation Engine, use **File > Export** and choose Normalized PDF as the export format.
2. Select (in Automation Engine) or open (in PackEdge / Acrobat) your document and open the XMP information as explained below:

If you have...	go to...
Automation Engine	File > Info.
PackEdge	File > XMP Info.
the Esko XMP plug-in in Adobe Acrobat	Esko > XMP Document Info...

3. Click **Barcodes** in the **Data type** column (as below in PackEdge) to show the barcode information.



For more information, see the Shuttle, Automation Engine, PackEdge or XMP plug-in documentation.

Editing Barcodes in Other Esko Applications

The Dynamic Barcodes functionality is available both as a **DeskPack** plug-in and in **PackEdge**.

- To edit your document containing barcodes in **PackEdge**:
 - a) Export your Illustrator document to the Esko Normalized PDF format:
 - If you have Automation Engine, use **Shuttle** to launch the document into your chosen workflow. This converts it to Normalized PDF automatically.

Note: See the Adobe Illustrator Client documentation for setup information.

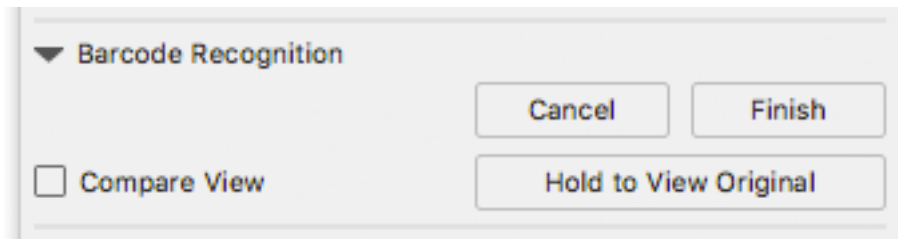
- If you don't have Automation Engine, use **File > Export** and choose Normalized PDF as the export format.
- b) Open your document in **PackEdge**.
- c) Go to **Production > Bar Code...** to edit your barcode as you would edit it with Dynamic Barcodes.

For more information, see the Shuttle and PackEdge documentation.

5.6. Barcode Recognition

Barcode Recognition is a new function in Dynamic Barcodes to convert vectorized (contourized) barcodes and images (e.g. a scanned in barcode) back into live editable barcodes.

1. Choose **Window > Esko > Dynamic Barcodes** to open the Dynamic Barcodes palette.



2. Select the objects (lineart or image) that you want to convert.
3. Click the **Extract** button.

Dynamic Barcode will analyse the selected objects, and when possible a Dynamic Barcode is generated replacing the selection.

- a) Click and hold **Hold to View Original** to hide the converted barcode and see the original lineart or image.
- b) Change any of the barcode parameters and click **Apply** to modify the generated barcode.
- c) Enable **Compare View** to show the newly generated barcode semi transparent on top of the original objects. This allows you to easily change position and parameters of the new barcode to match the original.

4. When you're happy with the result, click the **Finish** button.

This will remove the original objects from the document and close the Barcode Recognition session, leaving you with a barcode object that you can edit as needed.

Note: You can not do any other barcode recognition as long as the previous session wasn't ended, either by clicking the **Finish** or the **Cancel** button.

5.6.1. Supported Barcode Types and known limitations

The barcodes that are currently supported for Barcode Recognition are these:

- EAN-13 (including add-ons)
- EAN-8
- UPC-A (including add-ons)
- UPC-E (including add-ons)
- NDC-HRI
- Int. 2 of 5
- ITF-14
- ITF-16
- UPC-SCS
- Code-128
- Code-128 (long)
- HIBC-128
- GS1-128
- QR
- GS1-QR
- PZN

- PZN8

The barcode parameters that are currently recognized (when possible) are these:

- Barcode type
- Code
- Add-on presence
- Color (only when recognizing line art objects)
- HRI presence (only when recognizing line art objects)
- Height (only when recognizing line art objects)
- Rotation
- Magnification
- BWR (only when recognizing line art objects)
- Characters per unit
- Ratio

Other limitations:

- White Box, Light margin indicators, H gauges for ITF barcodes and HRI text parameters are not recognized.
- Device Compensation and Bar Width Reduction are both combined in the Bar Width Reduction
- An Int. 2 of 5 needs to have at least 6 digits.
- UPC-SCS with add-on is not recognized.
- If the original is an image, rotation is deduced from the rotation of the image. If the barcode inside the image is rotated over an angle other than a multiple of 90°, the recognizing will not work.
- Pre-defined barcode sizes for PZN barcodes may not always be recognized.

5.7. Barcode Types and Parameters

5.7.1. Supported Barcode Types

General Purpose Barcodes

1D	2D
<ul style="list-style-type: none"> • Code 39 • Code 93 on page 150 • 2 of 5 • Interleaved 2 of 5 • Codabar • Code 128 	<ul style="list-style-type: none"> • DataMatrix • QR • MicroQR

1D	2D
<ul style="list-style-type: none"> • Code 128 (long) • Klebrand on page 169 • MSI • SICK Code on page 183 	

Retail Barcodes

1D	2D
<ul style="list-style-type: none"> • EAN 13 • EAN 8 • UPC-A • UPC-E • GS1 DataBar Omnidirectional • GS1 DataBar Truncated • GS1 DataBar Stacked • GS1 DataBar Stacked Omnidirectional • GS1 DataBar Limited • GS1 DataBar Expanded • GS1 DataBar Expanded Stacked • GS1 128 • GS1 U.S. Coupon Interim • M+S 7 • Marks & Spencer 	<ul style="list-style-type: none"> • GS1 DataMatrix

Pharmaceutical, Healthcare and Cosmetic Barcodes

1D
<ul style="list-style-type: none"> • Bobst on page 145 • NDC / HRI

1D
<ul style="list-style-type: none"> • EAN 13 Swissmedic • Kurandt on page 170 • Laetus Pharma Code • CLF-8 • HIBC 39 • HIBC 128 • Paraf Italy • PZN • PZN8

Shipment Container Barcodes

1D
<ul style="list-style-type: none"> • ITF-14 • ITF-16 • UPC-SCS

Identity Document Barcode

2D
<ul style="list-style-type: none"> • PDF417 • MicroPDF417

GS1 Application Identifiers

These are the GS1 Application Identifiers available in Dynamic Barcodes:

AI	Data Content	Format (*)	FNC1 Required (****)
00	Serial Shipping Container Code (SSCC)	N2+N18	
01	Global Trade Item Number (GTIN)	N2+N14	
02	GTIN of Contained Trade Items	N2+N14	
10	Batch or Lot Number	N2+X..20	(FNC1)

11(**)	Production Date (YYMMDD)	N2+N6	
12(**)	Due Date (YYMMDD)	N2+N6	
13(**)	Packaging Date (YYMMDD)	N2+N6	
15(**)	Best Before Date (YYMMDD)	N2+N6	
16(**)	Sell By Date (YYMMDD)	N2+N6	
17(**)	Expiration Date (YYMMDD)	N2+N6	
20	Internal product variant	N2+N2	
21	Serial Number	N2+X..20	(FNC1)
22	Consumer product variant	N2+X..20	(FNC1)
235	Third Party Controlled, Serialised Extension of GTIN (TPX)	N3+X..28	(FNC1)
240	Additional Item Identification	N3+X..30	(FNC1)
241	Customer Part Number	N3+X..30	(FNC1)
242	Made-to-Order Variation Number	N3+N..6	(FNC1)
243	Packaging Component Number	N3+X..20	(FNC1)
250	Secondary Serial Number	N3+X..30	(FNC1)
251	Reference to Source Entity	N3+X..30	(FNC1)
253	Global Document Type Identifier (GDTI)	N3+N13+X..17	(FNC1)
254	GLN Extension Component	N3+X..20	(FNC1)
255	Global Coupon Number (GCN)	N3+N13+N..12	(FNC1)
30	Variable Count of Items (Variable Measure Trade Item)	N2+N..8	(FNC1)
310n (***)	Net weight, kilograms (Variable Measure Trade Item)	N4+N6	
311n (***)	Length or first dimension, metres (Variable Measure Trade Item)	N4+N6	
312n (***)	Width, diameter, or second dimension, metres (Variable Measure Trade Item)	N4+N6	
313n (***)	Depth, thickness, height, or third dimension, metres (Variable Measure Trade Item)	N4+N6	
314n (***)	Area, square metres (Variable Measure Trade Item)	N4+N6	
315n (***)	Net volume, litres (Variable Measure Trade Item)	N4+N6	
316n (***)	Net volume, cubic metres (Variable Measure Trade Item)	N4+N6	

320n (***)	Net weight, pounds (Variable Measure Trade Item)	N4+N6
321n (***)	Length or first dimension, inches (Variable Measure Trade Item)	N4+N6
322n (***)	Length or first dimension, feet (Variable Measure Trade Item)	N4+N6
323n (***)	Length or first dimension, yards (Variable Measure Trade Item)	N4+N6
324n (***)	Width, diameter, or second dimension, inches (Variable Measure Trade Item)	N4+N6
325n (***)	Width, diameter, or second dimension, feet (Variable Measure Trade Item)	N4+N6
326n (***)	Width, diameter, or second dimension, yards (Variable Measure Trade Item)	N4+N6
327n (***)	Depth, thickness, height, or third dimension, inches (Variable Measure Trade Item)	N4+N6
328n (***)	Depth, thickness, height, or third dimension, feet (Variable Measure Trade Item)	N4+N6
329n (***)	Depth, thickness, height, or third dimension, yards (Variable Measure Trade Item)	N4+N6
330n (***)	Logistic weight, kilograms	N4+N6
331n (***)	Length or first dimension, metres	N4+N6
332n (***)	Width, diameter, or second dimension, metres	N4+N6
333n (***)	Depth, thickness, height, or third dimension, metres	N4+N6
334n (***)	Area, square metres	N4+N6
335n (***)	Logistic volume, litres	N4+N6
336n (***)	Logistic volume, cubic metres	N4+N6
337n (***)	Kilograms per square metre	N4+N6
340n (***)	Logistic weight, pounds	N4+N6
341n (***)	Length or first dimension, inches	N4+N6
342n (***)	Length or first dimension, feet	N4+N6
343n (***)	Length or first dimension, yards	N4+N6
344n (***)	Width, diameter, or second dimension, inches	N4+N6
345n (***)	Width, diameter, or second dimension, feet	N4+N6
346n (***)	Width, diameter, or second dimension, yard	N4+N6
347n (***)	Depth, thickness, height, or third dimension, inches	N4+N6

348n (***)	Depth, thickness, height, or third dimension, feet	N4+N6	
349n (***)	Depth, thickness, height, or third dimension, yards	N4+N6	
350n (***)	Area, square inches (Variable Measure Trade Item)	N4+N6	
351n (***)	Area, square feet (Variable Measure Trade Item)	N4+N6	
352n (***)	Area, square yards (Variable Measure Trade Item)	N4+N6	
353n (***)	Area, square inches	N4+N6	
354n (***)	Area, square feet	N4+N6	
355n (***)	Area, square yards	N4+N6	
356n (***)	Net weight, troy ounces (Variable Measure Trade Item)	N4+N6	
357n (***)	Net weight (or volume), ounces (Variable Measure Trade Item)	N4+N6	
360n (***)	Net volume, quarts (Variable Measure Trade Item)	N4+N6	
361n (***)	Net volume, gallons U.S. (Variable Measure Trade Item)	N4+N6	
362n (***)	Logistic volume, quarts	N4+N6	
363n (***)	Logistic volume, gallons U.S.	N4+N6	
364n (***)	Net volume, cubic inches (Variable Measure Trade Item)	N4+N6	
365n (***)	Net volume, cubic feet (Variable Measure Trade Item)	N4+N6	
366n (***)	Net volume, cubic yards (Variable Measure Trade Item)	N4+N6	
367n (***)	Logistic volume, cubic inches	N4+N6	
368n (***)	Logistic volume, cubic feet	N4+N6	
369n (***)	Logistic volume, cubic yards	N4+N6	
37	Count of Trade Items	N2+N..8	(FNC1)
390n (***)	Applicable Amount Payable or Coupon Value, local currency	N4+N..15	(FNC1)
391n (***)	Applicable Amount Payable with ISO Currency Code	N4+N3+N..15	(FNC1)
392n (***)	Applicable Amount Payable, single monetary area (Variable Measure Trade Item)	N4+N..15	(FNC1)

393n (***)	Applicable Amount Payable with ISO Currency Code (Variable Measure Trade Item)	N4+N3+N..15	(FNC1)
394n (***)	Percentage discount of a coupon	N4+N4	(FNC1)
395n (***)	Amount payable per unit of measure single monetary area (variable measure trade item)	N4+N6	(FNC1)
400	Customer's Purchase Order Number	N3+X..30	(FNC1)
401	Global Identification Number for Consignment (GINC)	N3+X..30	(FNC1)
402	Global Shipment Identification Number (GSIN)	N3+N17	(FNC1)
403	Routing Code	N3+X..30	(FNC1)
410	Ship to - Deliver to Global Location Number	N3+N13	
411	Bill to - Invoice to Global Location Number	N3+N13	
412	Purchased from Global Location Number	N3+N13	
413	Ship for - Deliver for - Forward to Global Location Number	N3+N13	
414	Identification of a Physical Location - Global Location Number	N3+N13	
415	Global Location Number of the Invoicing Party	N3+N13	
416	GLN of the production or service location	N3+N13	
417	Party GLN	N3+N13	
420	Ship to - Deliver to Postal Code Within a Single Postal Authority	N3+X..20	(FNC1)
421	Ship to - Deliver to Postal Code with ISO Country Code	N3+N3+X..9	(FNC1)
422	Country of Origin of a Trade Item	N3+N3	(FNC1)
423	Country of Initial Processing	N3+N3+N..12	(FNC1)
424	Country of Processing	N3+N3	(FNC1)
425	Country of Disassembly	N3+N3+N..12	(FNC1)
426	Country Covering full Process Chain	N3+N3	(FNC1)
427	Country Subdivision of Origin	N3+X..3	(FNC1)
4300	Ship-to / Deliver-to company name	N4+X..35	(FNC1)
4301	Ship-to / Deliver-to contact	N4+X..35	(FNC1)
4302	Ship-to / Deliver-to address line 1	N4+X..70	(FNC1)
4303	Ship-to / Deliver-to address line 2	N4+X..70	(FNC1)
4304	Ship-to / Deliver-to suburb	N4+X..70	(FNC1)
4305	Ship-to / Deliver-to locality	N4+X..70	(FNC1)

4306	Ship-to / Deliver-to region	N4+X..70	(FNC1)
4307	Ship-to / Deliver-to country code	N4+X2	(FNC1)
4308	Ship-to / Deliver-to telephone number	N4+X..30	(FNC1)
4310	Return-to company name	N4+X..35	(FNC1)
4311	Return-to contact	N4+X..35	(FNC1)
4312	Return-to address line 1	N4+X..70	(FNC1)
4313	Return-to address line 2	N4+X..70	(FNC1)
4314	Return-to suburb	N4+X..70	(FNC1)
4315	Return-to locality	N4+X..70	(FNC1)
4316	Return-to region	N4+X..70	(FNC1)
4317	Return-to country code	N4+X2	(FNC1)
4318	Return-to postal code	N4+X..20	(FNC1)
4319	Return-to telephone number	N4+X..30	(FNC1)
4320	Service code description	N4+X..35	(FNC1)
4321	Dangerous goods flag	N4+N1	(FNC1)
4322	Authority to leave	N4+N1	(FNC1)
4323	Signature required flag	N4+N1	(FNC1)
4324	Not before delivery date time	N4+N10	(FNC1)
4325	Not after delivery date time	N4+N10	(FNC1)
4326	Release date	N4+N6	(FNC1)
7001	NATO Stock Number (NSN)	N4+N13	(FNC1)
7002	UN/ECE Meat Carcasses and Cuts Classification	N4+X..30	(FNC1)
7003	Expiration Date and Time	N4+N10	(FNC1)
7004	Active Potency	N4+N..4	(FNC1)
7005	Catch Area	N4+X..12	(FNC1)
7006	First Freeze Date	N4+N6	
7007	Harvest Date	N4+N6..12	(FNC1)
7008	Species for Fishery Purposes	N4+X..3	(FNC1)
7009	Fishing Gear Type	N4+N..10	(FNC1)
7010	Production Method	N4+X..2	(FNC1)
7020	Refurbishment lot ID	N4+X..20	(FNC1)
7021	Functional status	N4+X..20	(FNC1)
7022	Revision status	N4+X..20	(FNC1)

7023	Global Individual Asset Identifier (GIAI) of an assembly	N4+X..30	(FNC1)
703s	Number of Processor with ISO Country Code	N4+N3+X..27	(FNC1)
7040	GS1 UIC with Extension 1 and Importer index	N4+N1X2+X3+X4	(FNC1)
710	National Healthcare Reimbursement Number (NHRN) – Germany PZN	N3+X..20	(FNC1)
711	National Healthcare Reimbursement Number (NHRN) – France CIP	N3+X..20	(FNC1)
712	National Healthcare Reimbursement Number (NHRN) – Spain CN	N3+X..20	(FNC1)
713	National Healthcare Reimbursement Number (NHRN) – Brasil DRN	N3+X..20	(FNC1)
714	National Healthcare Reimbursement Number (NHRN) – Portugal AIM	N3+X..20	(FNC1)
723s(****)	Certification reference	N4+X2+X...28	(FNC1)
7240	Clinical Trial Protocol ID	N4+X..20	(FNC1)
8001	Roll Products (Width, Length, Core Diameter, Direction, Splices)	N4+N14	(FNC1)
8002	Cellular Mobile Telephone Identifier	N4+X..20	(FNC1)
8003	Global Returnable Asset Identifier (GRAI)	N4+N14+X..16	(FNC1)
8004	Global Individual Asset Identifier (GIAI)	N4+X..30	(FNC1)
8005	Price Per Unit of Measure	N4+N6	(FNC1)
8006	Identification of the Components of a Trade Item	N4+N14+N2+N2	(FNC1)
8007	International Bank Account Number (IBAN)	N4+X..34	(FNC1)
8008	Date and Time of Production	N4+N8+N..4	(FNC1)
8010	Component / Part Identifier (CPID)	N4 + X..30	(FNC1)
8011	Component / Part Identifier Serial Number (CPID SERIAL)	N4 + N..12	(FNC1)
8012	Software version	N4+X..20	(FNC1)
8013	Global Model Number (GMN)	N4+X..30	(FNC1)
8017	Global Service Relation Number to identify the relationship between an organisation offering services and the provider of services	N4+N18	(FNC1)
8018	Global Service Relation Number to identify the relationship between an organisation offering services and the recipient of services	N4+N18	(FNC1)
8019	Service Relation Instance Number (SRIN)	N4+N..10	(FNC1)

8020	Payment Slip Reference Number	N4+X..25	(FNC1)
8026	ITIP of contained pieces	N4+N18	
8110	Coupon Code Identification for Use in North America	N4+X..70	(FNC1)
8111	Loyalty points of a coupon	N4+N4	(FNC1)
8112	Paperless coupon code identification for use in North America	N4+X..70	(FNC1)
8200	Extended Packaging URL	N4+X..70	(FNC1)
90	Information Mutually Agreed Between Trading Partners	N2+X..30	(FNC1)
91 to 99	Company Internal Information	N2+X..30	(FNC1)

Notes

- *: The first position indicates the length (number of digits) of the GS1 Application Identifier. The following value refers to the format of the data content.

The following convention is applied:

n	implied decimal point position
N	numeric digit
X	any character
N3	3 numeric digits, fixed length
N..3	up to 3 numeric digits
X..3	up to 3 characters

- ** : If only year and month are available, DD must be filled with two zeroes.
- ***: The fourth digit of this GS1 Application Identifier indicates the implied decimal point position.
Example:
 - 3100 Net weight in kg without a decimal point
 - 3102 Net weight in kg with two decimal points
- FNC1: All GS1 Application Identifiers indicated with (FNC1) are defined as of variable length and shall be delimited unless this Element String is the last one to be encoded in the symbol. The delimiter shall be a Function 1 Symbol Character in GS1-128 Symbology, GS1 DataBar Expanded Versions and GS1 Composite Symbology and should be a Function 1 Symbol Character in GS1 DataMatrix and GS1 QR Code Symbology.
- ****: The fourth digit of this AI indicates the sequence number, allowing multiple occurrences of this AI
- *****: All GS1 Application Identifiers indicated with (FNC1) are defined as of variable length and shall be delimited unless this Element String is the last one to be encoded in the symbol. The delimiter shall be a Function 1 Symbol Character in GS1-128 Symbology, GS1 DataBar Expanded Versions and

GS1 Composite Symbology and should be a Function 1 Symbol Character in GS1 DataMatrix and GS1 QR Code Symbology.

5.7.2. Barcode Types

To create a barcode of a specific type, select it in the **Barcode Type** parameter. This displays parameters specific to this barcode type in the **Dynamic Barcodes** dialog.

2 of 5

About this Barcode...

2 of 5 is a numeric self-checking barcode, which can have a variable length. This barcode only encodes data in the bars. It is used for industrial applications, article numbering, photo development and ticketing.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Box](#) on page 198
- [Stroke Weight: Bearer Bars](#) on page 199

Bobst

About this Barcode...

The Bobst barcode is part of the same "binary" barcode family as the Laetus Pharma Code, Kurandt and CLF-8. It is used in the pharmaceutical industry.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Wide Bar](#) on page 194
- [Gap](#) on page 194
- [Decimal Input](#) on page 195
- [Box](#) on page 198

CLF-8

About this Barcode...

The CLF-8 barcode is part of the same "binary" barcode family as the Laetus Pharma Code, Kurandt and Bobst barcode. It is used in the pharmaceutical industry.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Wide Bar](#) on page 194
- [Gap](#) on page 194
- [Decimal Input](#) on page 195

Codabar

About this Barcode...

The Codabar barcode is commonly used in libraries, blood banks, and the air parcel business. It can encode up to 126 characters of data and two control characters, using digits and the "-", "\$", ":", "/" and "+" characters.



Parameters

General Parameters

- [Rotation](#) on page 187

- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- **Rational (Constant Bar Width):** By enabling this option, you can create a "Rational" Codabar bar code.
- [Use "992" Prod. Family in UPC](#) on page 190
- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

Code 128

About this Barcode...

Code 128 is a variable length, high density, alphanumeric barcode. It has the second highest density of all the 1D barcodes (after the GS1 Databar Expanded).

It can contain a set of control characters. These control characters can change the character encoding type. In the absence of control characters, the encoding type is chosen automatically, to optimize the content encoding.

To force the usage of the code-set A, precede your data with the [a] control character. To force the usage of the code-set B, precede your data with the [b] control character. To obtain an optimal utilization of the code-sets A and B but prevent the usage of the space saving code-set C, use the Code 128 (long) barcode type instead.

You can include FNC characters in your code by entering [F1] for FNC1, [F2] for FNC2 or [F3] for FNC3



Parameters

General Parameters

- [Rotation](#) on page 187

- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188

- [Light Margin Indicator](#) on page 189

- [Font Family, Style and Size](#) on page 190

- [Alignment](#) on page 190

- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191

- [Device Compensation](#) on page 191

- [Height](#) on page 192

- [Characters per unit](#) on page 192

- [Narrow Bar](#) on page 194

- [Width](#) on page 194

- [Box](#) on page 198

- [Stroke Weight: Bearer Bars](#) on page 199

Code 128 (long)

About this Barcode...

Code 128 (long) is a version of Code 128 that doesn't use the space-saving "C" character set. This makes Code 128 (long) barcodes generally longer.

You can include FNC characters in your code by entering [F1] for FNC1, [F2] for FNC2 or [F3] for FNC3



Parameters

General Parameters

- [Rotation](#) on page 187

- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188

- [Light Margin Indicator](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Narrow Bar](#) on page 194
- [Width](#) on page 194
- [Box](#) on page 198
- [Stroke Weight: Bearer Bars](#) on page 199

Code 39

About this Barcode...

Code 39 is a popular barcode in industrial barcoding systems, mainly in the U.S.A. It is used in the non-retail industry, particularly in the manufacturing, military, and health sectors. It can encode alphanumeric data.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191

- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Add Check Digit](#) on page 196
- [Box](#) on page 198

Code 93

About this Barcode...

Code 93 is a variable length, high density, alphanumeric barcode. It's an enhancement of the Code 39 using spaces as well as bars as a data carrier. It contains two check characters for higher data security. The Code 93 barcode allows encoding the first 128 characters of the ASCII table.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

- [Stroke Weight: Bearer Bars](#) on page 199

DataMatrix

About this Barcode...

DataMatrix is used for encoding large amounts of alphanumeric data and / or marking small objects. It can encode all the standard ASCII and extended ASCII characters.

The DataMatrix symbol size can adjust automatically depending on the amount of data.

Dynamic Barcodes doesn't generate human readable characters for DataMatrix symbols. The data to be encoded in a DataMatrix symbol can contain an FNC1 character but only at the beginning of the data.

Note: Dynamic Barcodes always generates DataMatrix symbols with the recommended ECC200 error correction scheme.



DataMatrix Macro functions

Using DataMatrix Macro sequences, you can reduce the amount of data to encode by omitting obvious headers and trailers. The structured data uses control characters, entered using their standard abbreviations between "<" and ">"

The Macro sequence contains different parts:

- The optional Macro header: [] >. This is optional, and can be omitted
- One of the starting sequences: <RS>05<GS> or <RS>06<GS>
- The macro content in a structured format
- The ending sequence: <RS><EOT>

Here are a few examples of a valid Macro function:

- [] ><RS>05<GS>PAP16559-2<GS>S0<72>017<GS>IPWP4511<RS><EOT>
- <RS>05<GS>PAP16559-2<GS>S0<72>017<GS>IPWP4511<RS><EOT>

Note that apart from the Macro functions, you can enter all control characters to a DataMatrix code. These are all accepted codes:

<NUL><SOH><STX><ETX><EOT><ENQ><ACK><BEL><BS><HT><LF><VT><FF><CR><SO><SI><DLE><DC1><

Note: If you want to use one of the control character substitutions literally (e.g. "<EOT>") it can be escaped by doubling the first character: <<EOT>

Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Symbol Type](#) on page 196
- [Cell Size](#) on page 196
- [Width / Total Height](#) on page 197
- [Box](#) on page 198

EAN 8

About this Barcode...

EAN 8 is an abbreviated version of EAN 13, for use on smaller packages. It can encode eight digits, and can have two or five additional digits.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Light Margin Indicator](#) on page 189
- [Add-on Text On Top](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192

- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

EAN 13

About this Barcode...

European Article Numbering system or EAN is the standard for article numbering in Europe. It is also used in Japan where it is called JAN.

Note: EAN is the European equivalent of the UPC system in the U.S.A. and Canada. Both systems use the same size requirements and a similar encoding scheme. This means that most European and American retail barcode scanners can read both EAN and UPC barcodes. For more information on UPC, see [UPC-A](#) on page 184.



An EAN 13 is a numeric barcode of thirteen digits, and can have two or five additional digits.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Light Margin Indicator](#) on page 189
- [Add-on Text On Top](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

EAN 13 Swissmedic

About this Barcode...

EAN 13 Swissmedic is an EAN 13 barcode used for items licensed by the Swiss Agency for Therapeutic Products

It always starts with "7680", uses a specific text positioning and adds the text "swissmedic" below the code.

For EAN 13 Swissmedic barcodes, only the default font settings can be used.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

GS1 128

About this Barcode...

GS1 128 (formerly EAN 128) is a Code 128 barcode designed primarily to identify products.

It contains one or more FNC1 (GS1 Function Code 1) control characters and Application Identifiers. It shows parentheses around the human readable interpretation of the Application Identifiers, but those parentheses are not encoded in the barcode.



It is alphanumeric and can also contain composite symbols.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191

- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198
- [Stroke Weight: Bearer Bars](#) on page 199

GS1 DataBar Omnidirectional

About this Barcode...

Barcodes of the GS1 DataBar family (formerly Reduced Space Symbols or RSS) can identify small items, and encode more information than the current EAN or UPC barcodes.

They can include GS1 Application Identifiers such as serial numbers, lot numbers, expiration dates...

Note: GS1 DataBar codes are expected to replace most common EAN and UPC barcodes from 2010.

GS1 DataBar Omnidirectional encodes Global Trade Item Numbers (GTIN) in a linear symbol that can be scanned omnidirectionally by suitably programmed slot scanners.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataBar Stacked

About this Barcode...

GS1 DataBar Stacked is a variation of the GS1 DataBar barcode, that is stacked in two rows and used when the normal barcode would be too wide for the product.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataBar Stacked Omnidirectional

About this Barcode...

GS1 DataBar14 Stacked Omnidirectional is taller version of GS1 DataBar14 Stacked, that can be read by omnidirectional scanners.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataBar Truncated

About this Barcode...

GS1 DataBar Truncated (formerly RSS Limited) is similar to GS1 DataBar but the height of its bars is truncated.

It encodes Global Trade Item Numbers in a smaller symbol for use on small items. It cannot be scanned omnidirectionally.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataBar Expanded

About this Barcode...

GS1 DataBar Expanded (formerly RSS Expanded) encodes regular barcode data (“primary item identification” data) and Application Identifiers. It can encode alphanumeric characters.

This barcode can be scanned omnidirectionally by suitably programmed slot scanners.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188

- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

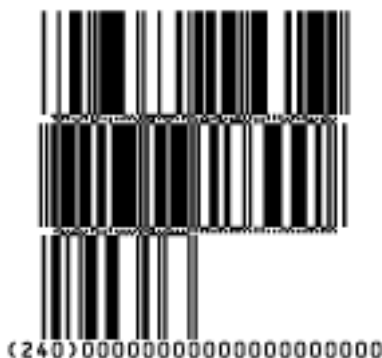
Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataBar Expanded Stacked

About this Barcode...

GS1 DataBar Expanded Stacked can encode the same amount of data as GS1 DataBar Expanded, but can also “stack” the barcode into several rows to save space.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190

- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Max. Row Width](#) on page 190
- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataBar Limited

About this Barcode...

GS1 Databar Limited is smaller than the GS1 DataBar barcode and can only encode Global Trade Item Numbers whose data part starts with "1".



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187
- [Composite Component](#) on page 188

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195

GS1 DataMatrix

About this Barcode...

The GS1 Data Matrix barcode is a high density, high capacity, scalable 2D barcode. It is used to concentrate a lot of (alphanumeric) information in a very small space.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Light Margin Indicator](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Symbol Type](#) on page 196
- [Cell Size](#) on page 196
- [Width / Total Height](#) on page 197
- [Box](#) on page 198

GS1 QR

About this Barcode...

The GS1 QR barcode is a high density, high capacity, scalable 2D barcode. It is used to assemble multiple GS1 Application Identifiers to a barcode with limited space needs. The GS1 QR barcode can contain numbers, 0 - 9, upper case letters A -Z, and nine special characters: space \$ % * + - . /

For more technical information on the QR code, see [QR](#) on page 180

Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Put on Top](#) on page 189
- [Multiple Text Lines](#) on page 189
- [Light Margin Indicator](#) on page 189
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Symbol Type](#) on page 196
- [Cell Size](#) on page 196
- [Width / Total Height](#) on page 197
- [Box](#) on page 198

Specific Parameters

Minimum Symbol Size

Choose the number of cells to use for your barcode (in the format “horizontal cells x vertical cells”).

Note: If the number of cells you choose for your symbol is too small to encode the data you entered in **Code**, Dynamic Barcodes will use a bigger symbol size automatically.

Error Correction

Error correction adds check sums to the barcode to detect and correct incorrect data. You can choose one of the following **Error correction** levels:

- Level **L**: 7% of codewords can be restored.
- Level **M**: 15% of codewords can be restored.
- Level **Q**: 25% of codewords can be restored.
- Level **H**: 30% of codewords can be restored.

Note: Keep in mind that a higher correction level makes the barcode bigger (as more check sums are added to the barcode) and may limit the maximum length of the encoded data.

Width / Height

The **Width** and **Height** parameters depend on the **Cell Size** and the number of cells used for the symbol (**Minimum Symbol Size**).

For example, a symbol of 25 x 25 cells where each cell is 2 mm gives a Width and Height of 50 x 50 mm.

GS1 U.S. Coupon Interim

About this Barcode...

GS1 U.S. Coupon Interim is an interim coupon barcode. It is used during the transition between UPC-A coupons and the new GS1 Databar Expanded Stacked coupons, that can encode more information.

It is made of both an old UPC-A coupon barcode, and a new Databar Expanded Stacked coupon barcode, to be readable by both old and new scanners.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190

Additional Parameters

- [Use "992" Prod. Family in UPC](#) on page 190
- [Max. Row Width](#) on page 190
- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Narrow Bar](#) on page 194
- [Gap](#) on page 194
- [Vertical alignment](#) on page 194

HIBC 128

About this Barcode...

This barcode is based on the Code 128 symbology.

It encodes the organization's primary and / or secondary Labeler Identification Code (LIC). This encoding begins with the "+" character. If both primary and secondary Labeler Identification Codes are encoded in one barcode, they are divided by the "/" character.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Narrow Bar](#) on page 194
- [Width](#) on page 194
- [Box](#) on page 198
- [Stroke Weight: Bearer Bars](#) on page 199

HIBC 39

About this Barcode...

This barcode is based on the Code 39 symbology.

It encodes the organization's primary and / or secondary Labeler Identification Code (LIC). This encoding begins with the "+" character. If both primary and secondary Labeler Identification Codes are encoded in one barcode, they are divided by the "/" character.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

ITF-14

About this Barcode...

ITF-14 is a standardized version of the Interleaved 2 of 5 barcode, containing 14 digits, the last being a check digit.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188

- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

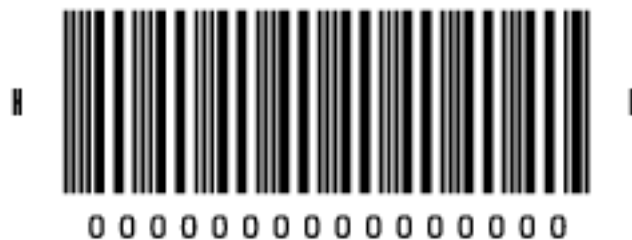
Additional Parameters

- [Text Format](#) on page 191
- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Total Height](#) on page 197
- [Smax / Smin](#) on page 197
- [Box](#) on page 198

ITF-16

About this Barcode...

ITF-16 is a standardized version of the Interleaved 2 of 5 barcode, containing 16 digits, the last being a check digit.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Text Format](#) on page 191

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Total Height](#) on page 197
- [Smax / Smin](#) on page 197
- [Box](#) on page 198

Interleaved 2 of 5

About this Barcode...

Interleaved 2 of 5 (or Int. 2 of 5) is a barcode originally used for transportation packaging, that can have any even number of digits. Since this type of packaging consists mainly of cardboard boxes printed in low quality, the Interleaved 2 of 5 barcode is more tolerant to distortion than other barcodes.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194

- [Box](#) on page 198
- [Stroke Weight: Bearer Bars](#) on page 199

Klebrand

About this Barcode...

Klebrand is a barcode used in the packaging industry. It uses four different bar thicknesses to encode the data. The barcode uses the quaternary numerical system and each bar thickness represents one of four numbers allowed in the non-decimal input (0, 1, 2 and 3). It can have up to 30 bars. The input can be both in decimal and quaternary numerical systems.

- In non-decimal (quaternary) mode all digits are encoded, including any leading zeroes. For example "0031" is encoded to 4 bars.
- In decimal mode you can define the number of bars in total, by enter e.g. "6/4". The first number (6) defines the total number of bars, the second (4) defines the value to be encoded. If you enter a single number without defining the number of bars, the minimal number of bars needed for the value is used, and the code is adjusted accordingly. If you for example enter "9", the value will change to "4/9", as you need at least 4 bars to encode this value. The text below the barcode (if enabled) only shows the decimal value itself.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Wide Bar](#) on page 194
- [Gap](#) on page 194

- [Decimal Input](#) on page 195
- [Box](#) on page 198

Kurandt

About this Barcode...

The Kurandt barcode is part of the same "binary" barcode family as the Laetus Pharma Code, Bobst and CLF-8. It is used in the pharmaceutical industry.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Wide Bar](#) on page 194
- [Gap](#) on page 194
- [Decimal Input](#) on page 195
- [Box](#) on page 198

Laetus Pharma Code

About this Barcode...

The Laetus Pharma Code is part of the same barcode family as the Kurandt, Bobst and CLF-8 barcode. It was developed specifically to meet the requirements of the pharmaceutical packaging process.

It has established itself as the worldwide pharmaceutical industry barcode standard. It can encode numeric or binary data.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- **Miniature:** Use this option to create a miniature version of the bar code
- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Wide Bar](#) on page 194
- [Gap](#) on page 194
- [Decimal Input](#) on page 195
- [Box](#) on page 198

M+S 7

About this Barcode...

The M+S 7 barcode is an EAN 8 barcode modified by Marks & Spencer's, for use on own-brand products sold in their stores.

To make the M+S 7 barcode, the initial "0" is removed and the extra letters "M" and "S" are added to the human readable characters.

This means that the human readable characters contain seven digits plus the "M" and "S" letters.

Note: This doesn't affect the data encoded in the barcode (it still encodes eight digits), so you should enter eight digits when creating a M+S 7 barcode.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

MSI

About this Barcode...

MSI, also known as Modified Plessey, was developed by the MSI Data Corporation, based on the original Plessey Code. It is a numeric barcode used primarily to mark retail shelves for inventory control.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

Marks & Spencer's

About this Barcode...

The Marks & Spencer's barcode is also an EAN 8 barcode modified by Marks & Spencer's for use on own-brand products.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

NDC / HRI

About this Barcode...

The NDC / HRI barcode is a variant of the UPC barcode with special human readable interpretation formats compliant to the US National Drug Code definition.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

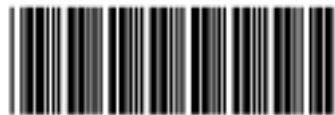
- [Text Format](#) on page 191
- [Bar Width Reduction](#) on page 191

- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

Paraf Italy

About this Barcode...

This barcode is a variant of Code 39 used by the Italian Health and Cosmetics Industry. It is also called Code 32.



Use **Code Base32** when your barcode data is encoded in the Base 32 format. This format uses case-insensitive alphanumeric characters to encode data.

Use **Code Base10** when your barcode data is in decimal format. Paraf Italy barcodes in decimal format should start with an "A" (included automatically by Dynamic Barcodes), have 8 digits of data and end with a check digit (calculated automatically by Dynamic Barcodes).

Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

PDF417

About this Barcode...

PDF417 is a 2D barcode mainly used in security printing (passports, identity cards, driving licences...). It is a "self-checking" barcode that can have different levels of error correction.

It can encode data using one of three “compaction” modes: Text (to encode all alphanumeric and punctuation characters in the ISO-8859-1 character set), Numeric (to encode only numeric characters) or Binary (to encode 8-bit characters).

It can use the three compaction modes in a single barcode if necessary, but you can choose to disable the Text and/or Numeric compaction modes.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

Specific Parameters

Columns

You can give your barcode between 1 and 30 **Columns**. The number of columns corresponds to the number of PDF417 codewords.

Rows

You can give your barcode between 3 and 90 **Rows**.

Truncated

Choose **Truncated** to make the symbol less wide by truncating the end character (which is not part of the encoded data) and the end pattern. In the example below, the top PDF417 barcode is not truncated, and the bottom barcode is truncated (but encodes the same data).



Initialize in Alpha Submode

Choose this option to generate a “shift to Text mode” character at the beginning of the barcode when using Text compaction mode. This makes the encoding clear for barcode scanners.

Allow Text Compaction

Choose this to let Dynamic Barcodes switch to Text compaction mode automatically when your barcode contains text data.

This encodes the text data in your barcode more efficiently (it makes that part of your barcode smaller).

Allow Numeric Compaction

Choose this to let Dynamic Barcodes switch to Numeric compaction mode automatically when your barcode contains numeric data.

This encodes the numeric data in your barcode more efficiently.

Note:

Dynamic Barcodes can always switch to the Binary compaction mode if your barcode contains binary data.

If you don't enable either **Allow Text Compaction** or **Allow Numeric Compaction**, Dynamic Barcodes will only use Binary compaction mode.

Error Correction Level

Error correction adds check sums to the barcode to detect and correct incorrect data. You can choose an **Error correction level** from 0 to 8.

The higher the correction level, the more check sums are added to the barcode and the more incorrect data can be corrected. Keep in mind that a higher correction level makes the barcode bigger and may limit the maximum length of the encoded data.

Note: Level 0 means that there is only one check sum added to the data, so incorrect data can be detected but not corrected.

You can choose **Automatic** to let the plug-in pick the best error correction level for the data encoded.

MicroPDF417

About this Barcode...

MicroPDF417 is a 2D multi-row barcode derived from PDF417, for use on smaller areas. It can encode up to 150 bytes.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191

- [Height](#) on page 192
- [Narrow Bar](#) on page 194
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

Specific Parameters

Columns

You can give your barcode between 1 and 4 **Columns**.

Rows

You can give your barcode between 4 and 44 **Rows**.

Allow Text Compaction

Choose this to let Dynamic Barcodes switch to Text compaction mode automatically when your barcode contains text data.

This encodes the text data in your barcode more efficiently (it makes that part of your barcode smaller).

Allow Numeric Compaction

Choose this to let Dynamic Barcodes switch to Numeric compaction mode automatically when your barcode contains numeric data.

This encodes the numeric data in your barcode more efficiently.

Note:

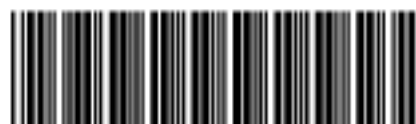
Dynamic Barcodes can always switch to the Binary compaction mode if your barcode contains binary data.

If you don't enable either **Allow Text Compaction** or **Allow Numeric Compaction**, Dynamic Barcodes will only use Binary compaction mode.

PZN

About this Barcode...

The PZN (Pharma-Zentral-Nummer) barcode is used for distribution of pharmaceutical and healthcare products in Germany. The PZN code is written in the format "PZN-nnnnnnn" but only the numeric part including the leading dash is encoded.



PZN-0000000

Parameters

General Parameters

- [Rotation](#) on page 187

- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188

- [Font Family, Style and Size](#) on page 190

- [Alignment](#) on page 190

- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191

- [Device Compensation](#) on page 191

- [Size](#) on page 192

- [Height](#) on page 192

- [Characters per unit](#) on page 192

- [Ratio](#) on page 194

- [Narrow Bar](#) on page 194

- [Box](#) on page 198

PZN8

About this Barcode...

The PZN8 (Pharma-Zentral-Nummer) barcode is used for distribution of pharmaceutical and healthcare products in Germany. The PZN code is written in the format "PZN-nnnnnnnn" but only the numeric part including the leading dash is encoded.



PZN-00000000

Parameters

General Parameters

- [Rotation](#) on page 187

- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Size](#) on page 192
- [Height](#) on page 192
- [Characters per unit](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Box](#) on page 198

QR

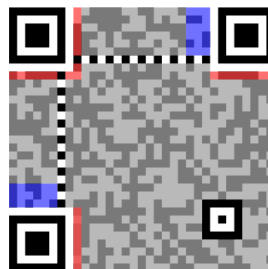
About this Barcode...







The QR barcode is a 2-dimensional barcode used for commercial tracking and convenience-oriented applications aimed at mobile phone users (known as "mobile tagging").

QR codes storing addresses and URLs may appear in magazines, on signs, buses, business cards, or other objects... Users with a camera phone equipped with the correct reader application can scan the QR code to display text, contact information, connect to a wireless network, or open a web page in the phone's browser.



QR codes have the following structure:



-  Position pattern (required)
-  Alignment pattern (required)
-  Timing pattern (required)
-  Version information
-  Format information
-  Data and error correction keys

Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Cell Size](#) on page 196
- [Width / Total Height](#) on page 197
- [Box](#) on page 198

Specific Parameters

Minimum Symbol Size

Choose the number of cells to use for your barcode (in the format “horizontal cells x vertical cells”).

Note: If the number of cells you choose for your symbol is too small to encode the data you entered in **Code**, Dynamic Barcodes will use a bigger symbol size automatically.

Error Correction

Error correction adds check sums to the barcode to detect and correct incorrect data. You can choose one of the following **Error correction** levels:

- Level **L**: 7% of codewords can be restored.
- Level **M**: 15% of codewords can be restored.

- Level **Q**: 25% of codewords can be restored.
- Level **H**: 30% of codewords can be restored.

Note: Keep in mind that a higher correction level makes the barcode bigger (as more check sums are added to the barcode) and may limit the maximum length of the encoded data.

Width / Height

The **Width** and **Height** parameters depend on the **Cell Size** and the number of cells used for the symbol (**Minimum Symbol Size**).

For example, a symbol of 25 x 25 cells where each cell is 2 mm gives a Width and Height of 50 x 50 mm.

MicroQR

About this Barcode...

The Micro QR Code is a very small QR Code for use on smaller spaces (for example to encode the ID of printed circuit boards and electronics parts).

It works with smaller amounts of data (maximum 35 numeric characters), and uses only one position pattern.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Cell Size](#) on page 196
- [Width / Total Height](#) on page 197
- [Box](#) on page 198

Specific Parameters

Minimum Symbol Size

Choose the number of cells to use for your barcode (in the format "horizontal cells x vertical cells").

Note: If the number of cells you choose for your symbol is too small to encode the data you entered in **Code**, Dynamic Barcodes will use a bigger symbol size automatically.

Error Correction

Error correction adds check sums to the barcode to detect and correct incorrect data. You can choose one of the following **Error correction** levels:

- Level **L**: 7% of codewords can be restored.
- Level **M**: 15% of codewords can be restored.
- Level **Q**: 25% of codewords can be restored.
- Level **H**: 30% of codewords can be restored.

Note: Keep in mind that a higher correction level makes the barcode bigger (as more check sums are added to the barcode) and may limit the maximum length of the encoded data.

Width / Height

The **Width** and **Height** parameters depend on the **Cell Size** and the number of cells used for the symbol (**Minimum Symbol Size**).

For example, a symbol of 15 x 15 cells where each cell is 2 mm gives a Width and Height of 30 x 30 mm.

SICK Code

About this Barcode...

SICK is a bar code used in the German packaging industry. It's a binary bar code, using a thick bar for a 0, and a thin bar for a 1. It can have up to 12 bars. It can encode numeric or binary data.

- In binary mode all digits are encoded including leading zeroes, ie. "0001" is encoded as a three thin and one thick bar.
- In decimal mode you can define the number of bars in total, by enter e.g. "6/4". The first number (6) defines the total number of bars, the second (4) defines the value to be encoded. If you don't define the number of bars, in other words if you enter a single number, the minimal number of bars needed for the value is used, and the code is adjusted accordingly. If you for example enter "9", the value will change to "4/9", as you need at least 4 bars to encode this value.
- The defaults follow the mostly used standard "Codetype A", for generating the "Codetype B" should be changed the barcode parameters as following: Narrow Bar to 1.25mm (from 0.5mm), Wide Bar to 3.75mm (from 1.5mm) and Gap to 2.5mm (from 1mm)

By default, the values for the Narrow Bar (0.5mm), Wide Bar (1.5mm) and Gap (1mm) are set for the mostly used standard "Codetype A". If you want to generate a SICK code using "Codetype B", you should set the Narrow Bar to 1.25mm, the Wide Bar to 3.75mm and the Gap to 2.5mm



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Alignment](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Height](#) on page 192
- [Ratio](#) on page 194
- [Narrow Bar](#) on page 194
- [Wide Bar](#) on page 194
- [Gap](#) on page 194
- [Decimal Input](#) on page 195
- [Box](#) on page 198

UPC-A

About this Barcode...

Universal Product Code or UPC is the standard for article numbering in the U.S.A. and Canada. It is similar to the EAN system and compatible with it. For more information on EAN, see [EAN 13](#) on page 153.



UPC-A is a numeric barcode of up to twelve digits, plus two or five additional digits.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

UPC-E

About this Barcode...

UPC-E is an abbreviated version of UPC-A, for use on smaller packages. It is a numeric barcode of eight digits, with an optional 2 or 5 digits add-on. You can also directly enter the 12-digit code of UPC-A codes that can be represented in 8 digits.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190

- [Vertical Offset](#) on page 190

Additional Parameters

- [Bar Width Reduction](#) on page 191
- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Box](#) on page 198

UPC-SCS

About this Barcode...

The UPC-SCS (Shipping Container Symbol) barcode is a version of the Interleaved 2 of 5 barcode that has a structure very similar to the Universal Product Code's (UPC) and specific formatting of the human readable interpretation.



Parameters

General Parameters

- [Rotation](#) on page 187
- [Code](#) on page 187

Text Parameters

- [Add Human Readable Characters](#) on page 188
- [Font Family, Style and Size](#) on page 190
- [Vertical Offset](#) on page 190

Additional Parameters

- [Text Format](#) on page 191
- [Bar Width Reduction](#) on page 191

- [Device Compensation](#) on page 191
- [Magnification](#) on page 191
- [Height](#) on page 192
- [Snap Bars to Output Resolution](#) on page 195
- [Total Height](#) on page 197
- [Box](#) on page 198
- [Stroke Weight: Bearer Bars](#) on page 199

5.7.3. Barcode Parameters

Rotation

To rotate your barcode by 90, 180 or 270 degrees, use the **Rotation** buttons.



To rotate it by any other angle, enter that angle in the **Rotation** field.

Code

Enter the data to encode in your bar code.

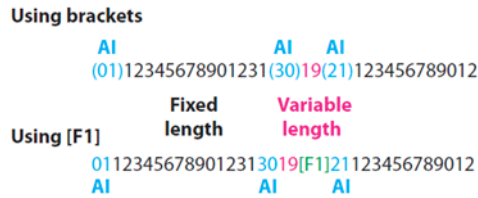
Dynamic Barcodes checks that the data you have entered is valid for your chosen **Barcode Type**. If it isn't, a warning / error will pop up.

Code for GS1 Bar Codes

When entering data to be encoded in GS1 bar codes, you can either enter Application Identifiers (AI) including the brackets, or you can enter the code without brackets, using FNC1 code at the end of each variable-length element in the data. The FNC1 code will be represented by [F1] when entering the code (with an exception for the GS1 DataMatrix barcode, which also allows the ASCII 29 <GS> control character as a separator). While entering GS1 data, following remarks should be taken into account:

- Do not add the mandatory FNC1 character at the beginning of the data. Dynamic Barcodes will add it automatically.
- For GS1 bar codes intended for encoding AI (01) only, AI has to be omitted, i.e. don't enter '01' at the beginning. It doesn't matter if entered with or without brackets.
- The Composite Component can be created using the same rules for using brackets and [F1]. It's not necessary to keep the same way of entering the Composite Component and the main code.
- If you don't use brackets for entering AI, type [F1] at the end of each variable-length element in the data, to represent a FNC1 terminating character, except when the variable-length element is placed at the end of the whole code.

- You don't need to type [F1] at the end of fixed-length elements.
- Do not mix using [F1] as terminators of variable AI and entering brackets around the AI.



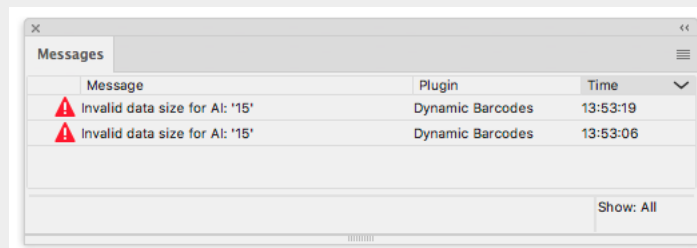
Dynamic Barcodes also checks the validity of the Application Identifiers you enter in the **Code** and / or in the **Composite Component** of GS1 bar codes.

Composite Component

A **Composite Component** is a 2D symbol placed on top of a GS1 barcode, that encodes extra information (batch number, expiration date...).

If you want your barcode to have a **Composite Component**, enter the (alphanumeric) data to encode in this field.

Note: Dynamic Barcodes checks the data you enter for the Composite Component (for example to see if the Application Identifiers you entered are correct), and displays a warning if it is invalid.



Add Human Readable Characters

This parameter adds "human readable" characters (numeric or alphanumeric characters) under your barcode.

This is the same barcode with and without human readable characters:



Put on Top

This parameter allows you to put the Human Readable Characters above instead of below the barcode bars.

Multiple Text Lines

Select this parameter if you want the human readable characters to be printed on multiple lines below the barcode. Dynamic Barcodes will start a new line for every element of the barcode data (starting with the Application Identifier).



Note: When opening your document in PackEdge, the characters will be placed back on a single line.

Light Margin Indicator

This parameter adds "<" and ">" signs (or only ">" depending on the barcode type) at the bottom of your barcode. This indicates the width the barcode should have for optimal reading.



Note: When creating a bar code, the current Light Margin Indicator setting is stored for the specific barcode type. This means that the next time you select the same barcode type (e.g. when creating a new barcode of that same type) the Light Margin Indicator setting will be adjusted.

Add-on Text On Top

This parameter allows you to put the add-on HRI text above instead of below the barcode bars. By default, this option is enabled.

Font Family, Style and Size

These options can be used to define the font family, style and size to be used for the human readable characters. By choosing **[default font]**, all other Text Parameters are disabled, as the default values are used.

Note: If the font used in a bar code is not available when opening the file, Adobe Illustrator will warn about a missing font. You can however only fix the problem using the Dynamic Barcode palette, since Adobe Illustrator's "Find Font" feature can not be used.

Alignment

When using human readable characters, in combination with custom font settings, you can set text alignment to **Left**, **Center** or **Right**.

Vertical Offset

This parameter allows you to add extra space between your barcode bars and the human readable characters.



Note: When opening your document in PackEdge, the characters will be placed just below the bars again.

Use "992" Prod. Family in UPC

Enable this parameter to use the special "992" product family in your barcode (for specific offers like discounts on the customer's next purchase or on variable weight items...).

Max. Row Width

Use this parameter to define how many segments of data (groups of bars encoding several digits) can fit in one row. If the barcode contains more segments, they will be stacked.

In the example below, the first barcode has a **Max. Row Width** of 8 segments. When reducing this to 4 segments, the segments that don't fit in the row width anymore are stacked, forming a second row (second barcode).



The GS1 Max Row Width parameter applies to the GS1 Databar Expanded Stacked component of the GS1 U.S. Coupon Interim barcode.

Text Format

Choose a text format for the human readable characters of your barcode.

For NDC/HRI barcodes, you can choose a variant of the U.S. National Drug Code.

For ITF-14, ITF-16 and UPC-SCS barcodes, you can choose a variant of the Shipping Container Symbol.

Bar Width Reduction

Use this to adjust the width of barcode bars, in order to compensate for ink bleeding when printing on your substrate.

Your printer or customer will usually provide you with the value to use. For example if your printer tells you that the line width will increase by 0.01mm, you should use a **Bar Width Reduction** value of 0.01 mm.

You can enter the **Bar Width Reduction** in microns, milli-inches ("mil"), millimeters or inches.

Tip: You can enter a negative value if you want to print thicker and not thinner bars.

Device Compensation

Use this if your printer gave you a separate device bleed value. This parameter adjusts the bar's width to compensate for bleed caused by the plate or film making process.

You can enter the **Device Compensation** in microns, milli-inches ("mil"), millimeters or inches.

Note: If you use both a Bar Width Reduction and a Device Compensation value, Dynamic Barcodes will add them to adjust the bar's width.

Tip: You can enter a negative value if you want to print thicker and not thinner bars.

Magnification

Use this parameter to increase or decrease the barcode size proportionally.

In the example below, you can see the same barcode at 80%, 100% and 120% magnification.



Size

Choose to give your PZN barcode a **Small**, **Normal** or **Large** size. Those are predefined sizes for this barcode. The actual Height, Characters per unit, Ratio and Narrow Bar values are shown underneath.

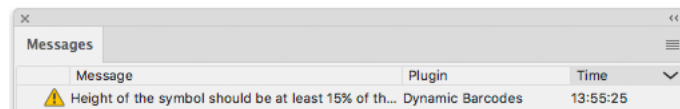
By selecting **Custom**, you can manually edit these four parameters.

Height

Enter the height to give to your barcode's bars. They need to be tall enough to be read easily by barcode scanners.

Code 128

In Dynamic Barcodes, you can create Code 128 barcodes shorter than the minimum height. Dynamic Barcodes will just display a warning, but if you export the document to EPF and open it in PackEdge, PackEdge will extend the barcode to its minimum required height.



Bars and Digits

For:

- EAN 8 & 13
- HIBC 128 and 39
- M+S 7, and Marks & Spencer's
- NDC / HRI
- UPC-A and UPC-E

For the bar codes listed above, the height you enter is the combined height of the bars and the human readable characters). Your barcode needs to be tall enough to be read easily by barcode scanners.



Attention: Do not change the **Height** of the barcode before entering a **Magnification** value. The **Height** will change again according to the **Magnification** factor you define.

Characters per unit

This parameter allows you to define your barcode's width based on the encoding of (numeric or alphanumeric) characters.

You can choose the unit to use: **micron**, **mil** (milli-inches), **mm** or **inch**.

For example, choose **mm** and use **1 Character per unit** in the **Dynamic Barcodes** dialog if you want the bars needed to encode one character to take up 1 mm.



Increase the **Characters per unit** value to make the barcode narrower, or decrease it to make the barcode wider. For example, if you choose **0.5 Character per unit**, the bars needed to encode one character will take up 2 mm.



Note: Barcodes like Interleaved 2 of 5 encode two characters together in a group of black and white bars. For these barcodes, Dynamic Barcodes takes half of the group of black and white bars to measure one character.



Ratio

The **Ratio** is the factor between the width of the narrow bar and the width of the wide bar in your barcode. For example, enter 3 if you want your wide bar to be three times as wide as your narrow bar.

Narrow Bar

This parameter determines the width of the narrowest bar of your barcode. In some cases (for example GS1 DataBar barcodes) this affects the size (height and width) of your barcode proportionally.

Width

This parameter determines the width of the barcode from the leftmost bar to the rightmost bar. Changing the Width will update the Narrow Bar and Characters per unit settings to achieve the desired size.

The Light Margin Indicators and Box are not included.

Wide Bar

This parameter determines the width of the widest bar of your barcode.

Gap

Enter the width of the white space between the bars.

Note: The **Ratio** influences the **Gap** size: increasing the Ratio also increases the **Gap** size.

Vertical alignment

Dynamic Barcodes allows you to resize either the UPC-A or the GS1 Databar Expanded Stacked coupon barcode, so they are aligned vertically with each other. You can choose:

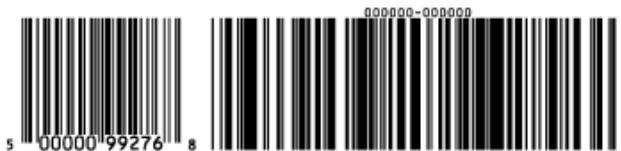
- **None** to keep the original size of both the UPC and the GS1 barcodes,



- **Resize UPC to GS1** to resize the UPC barcode so it has the same height as the GS1 barcode,



- **Resize GS1 to UPC** to resize the GS1 barcode so it has the same height as the UPC barcode.



Snap Bars to Output Resolution

Use this to adjust the barcode size parameters (**Bar Width Reduction**, **Device Compensation** and **Magnification**) so that the bars' width and height take up a complete number of pixels or dots.

Enable **Snap Bars to Output Resolution** and enter the resolution you will use to print your barcode in ppi.

Decimal Input

Use this parameter to change the type of data you can enter in the **Code** field.

- Disable it to enter the data to encode in binary format.
- Enable it to enter the data in decimal instead of binary format.

Note: When using binary format for the Laetus Pharma Code, CLF-8, Bobst or Kurandt barcode data, you need to use a special "Pharma" binary format.

To convert a decimal number into a Pharma binary number, do the following:

1. Add 1 to your decimal number.
2. Convert the result to a binary number using a regular binary conversion algorithm.
3. Remove the first digit (which is 1).

You now have your Pharma binary input for the Laetus Pharma Code, CLF-8, Bobst or Kurandt barcode.

For example, you want to encode the number 3.

1. $3+1=4$
2. 4 in binary is 100.
3. Without the first digit, it's 00.

Enter 00 in the **Code** field of your Laetus Pharma Code, CLF-8, Bobst or Kurandt barcode.

Add Check Digit

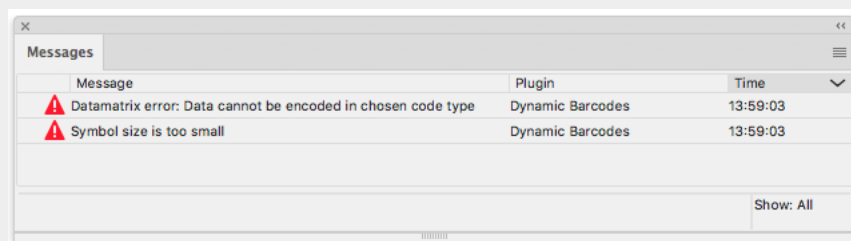
Use this parameter to add a check digit to your barcode data.

Note: Code 39 doesn't usually contain a check digit but it can be required in some cases.

Symbol Type

Choose the number of cells to use for your barcode (in the format "horizontal cells x vertical cells").

Note: If the number of cells you choose for your symbol is too small to encode the data you entered in **Code**, Dynamic Barcodes will display an error.



You can choose **Best Fit** to make Dynamic Barcodes automatically adapt the number of cells to the amount of data you entered in **Code**.

Cell Size

Enter the size you want to give to each cell of the symbol. This affects the size of the whole symbol.

The unit used is the one you chose as Illustrator's **General** unit in the **Units & Display Performance Preferences**.

In the example below, the first symbol has a 1 mm cell size (cells sides are 1 mm), and the second one a 2 mm cell size.



Width / Total Height

The **Width** and **Total Height** parameters depend on the **Cell Size** and the number of cells used for the symbol (**Symbol Type**).

In the example below, a symbol of 10 x 10 cells where each cell is 3 mm gives a Width and Total Height of 30 x 30 mm.

Symbol Type:	10 by 10
Cell Size:	1 mm
Width:	14 mm
Height:	14 mm

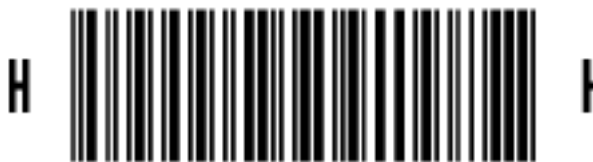
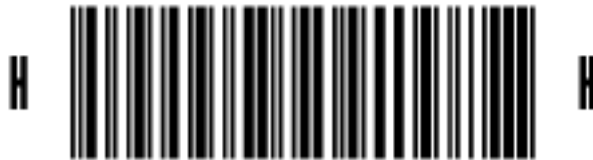
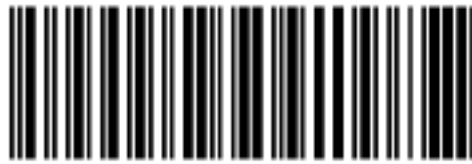
Total Height

Enter the total height you want to give to your barcode. This is the combined height of the bars, the human readable characters and the box. If your barcode doesn't contain human readable characters or a box, the **Total Height** is the same as the bars' **Height**.

Smax / Smin

Use these parameters to define the width of the printability gauges ("H" marks) either side of your barcode. **Smax** defines the width of the left "H", **Smin** defines the width of the right "H". Enter 0 in both fields if you don't want printability gauges.

In the example below, the top barcode has a value of 0 for both **Smax** and **Smin**, the middle one has a value of 4 and the bottom one has a value of 8 (the maximum).



Box

Use this parameter to create an opaque white box under your barcode.



Use the **Top**, **Bottom**, **Left** and **Right** fields to add a white margin around your barcode and make the box bigger.



By default, Dynamic Barcodes links the four margins' values so that when you change one of them, the other ones are updated automatically.



If you want to change them independently, click the link symbol to make it look detached .

For ITF, UCP and UPC-SCS bar codes, the box will be transparent.

Note: When creating a bar code, the current Box parameters are stored for the specific barcode type. This means that the next time you select the same barcode type (e.g. when creating a new barcode of that type) the Box parameters will be adjusted.

Stroke Weight: Bearer Bars

For **ITF-14**, **ITF-16** and **UPC-SCS** barcodes, enabling the **Box** option will create a transparent box, always with bearer bars around it. The **Stroke Weight** parameter defines the width of the bearer bars. In this case, it can't be set to zero.

For **2 of 5**, **Code 128**, **Code 128 long**, **Code 93**, **GS1 128**, **HIBC 128** and **Int 2 of 5** barcodes, the **Stroke Weight** defines the width of the bearer bars, but also define if bearer bars should be added: if the value is set to zero, no bearer bars are added, even if **Box** is enabled. If the value is not zero, bearer bars will be added, even if the **Box** option is disabled.

The bearer bars are positioned at the outside of the defined box, taking into account the margins (even if the **box** option is disabled for the barcode types mentioned above). See also [Box](#) on page 198.

The option **Only Top and Bottom Bars** limits the bearer bars to only the top and bottom line.

5.8. Barcode Parameters from the Job Folder

Automation Engine stores information related to the printing jobs within the Job Folder. Each Job Folder can hold various job-related technical information, including barcode parameters.

The following barcode parameters can be set in Automation Engine Pilot:

Parameter	Note	Link
Type	The type of barcode. You can't have two different bar codes of the same type in one job.	
Sub Type	The size of the symbol for Datamatrix barcodes.	Symbol Type on page 196
Code	The encoded value including check digits.	Code on page 187

Parameter	Note	Link
Composite Code	For barcodes with a Composite Component - mainly GS1 Databar codes	Composite Component on page 188
Output Resolution		Snap Bars to Output Resolution on page 195
Bar Width Reduction		Bar Width Reduction on page 191
Device Compensation		Device Compensation on page 191
Narrow Bar	Main size parameter for Code 128, Code 39, Interleaved 2 of 5, Codabar or MSI based barcodes, for GS1 DataBar barcodes, and for binary barcodes. For 2D barcodes such as DataMatrix, the parameter is used to set the Cell Size .	Narrow Bar on page 194 and Cell Size on page 196
Magnification	Main proportional size parameter for EAN and UPC based barcodes	Magnification on page 191
Ratio	Used for Int2of5 barcodes	Ratio on page 194

Important: Automation Engine does not check the parameters. All listed parameters are available for all barcode types, even if they are not valid for the given barcode type. Make sure you're entering the valid inputs, including a correct Code with its check digit.

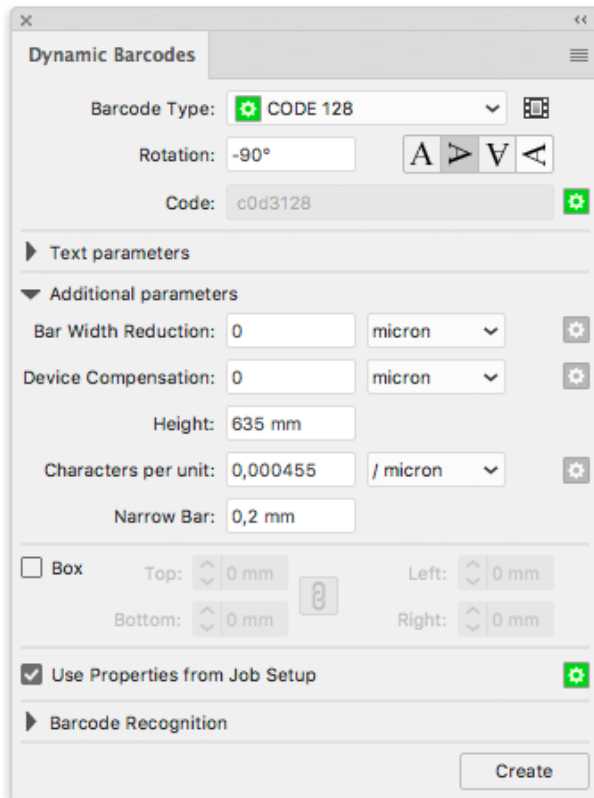
Note: It is not necessary to have the parameters already set on the Job Setup when creating barcodes: as soon as the Job Setup contains the settings for connected barcodes, these barcode parameters will be applied. This allows you to create templates or placeholders before the actual data (code for the barcode, etc) is available.

5.8.1. Connecting to a Job Folder

In order to take parameters from an Automation Engine Job Folder, you need to be connected to an Automation Engine, and open the file from the Automation Engine Job Folder. For easy locating the file on the server, you can use **File > Job Folder > Open from Job folder**

For more information on how to connect to Automation Engine, and on opening from a Job Folder, we refer to the Esko DataExchange documentation. See <http://help.esko.com/products/Esko%20Data%20Exchange%20for%20Adobe%20Illustrator>

5.8.2. Connect Dynamic Barcodes to Job Setup



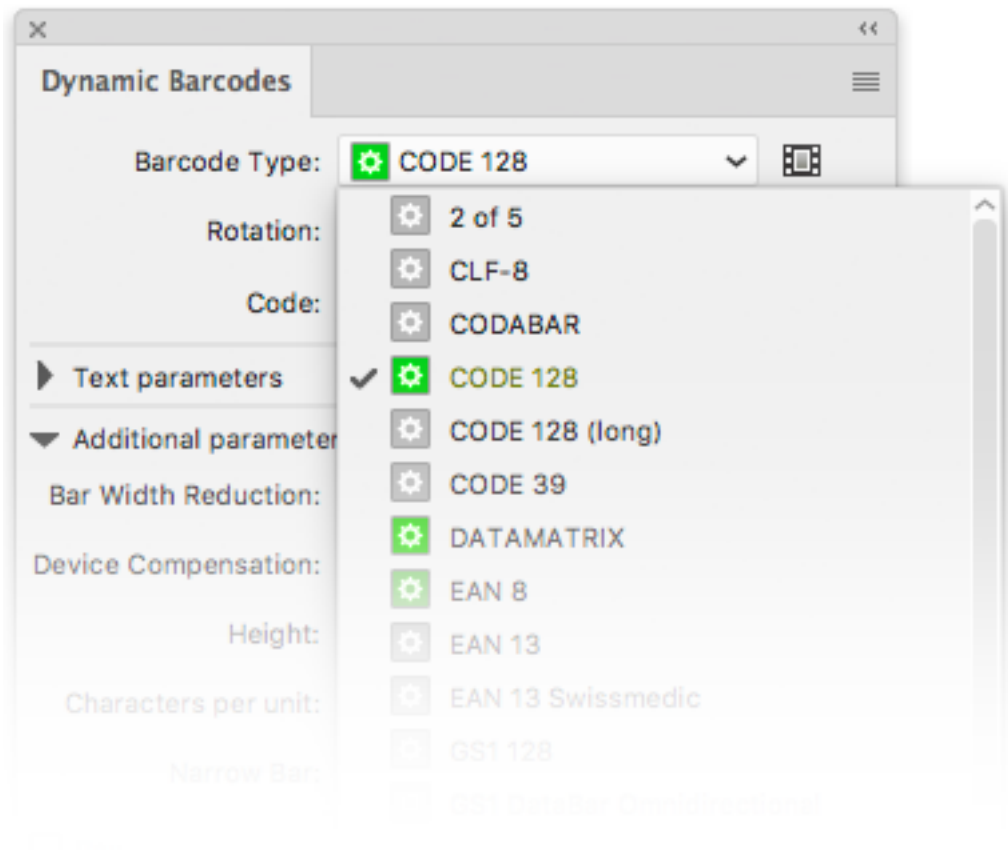
To use the Barcode properties from the Job Folder, enable the **Get Properties from Job Setup**.

When enabled, the icon on the right will indicate the status:

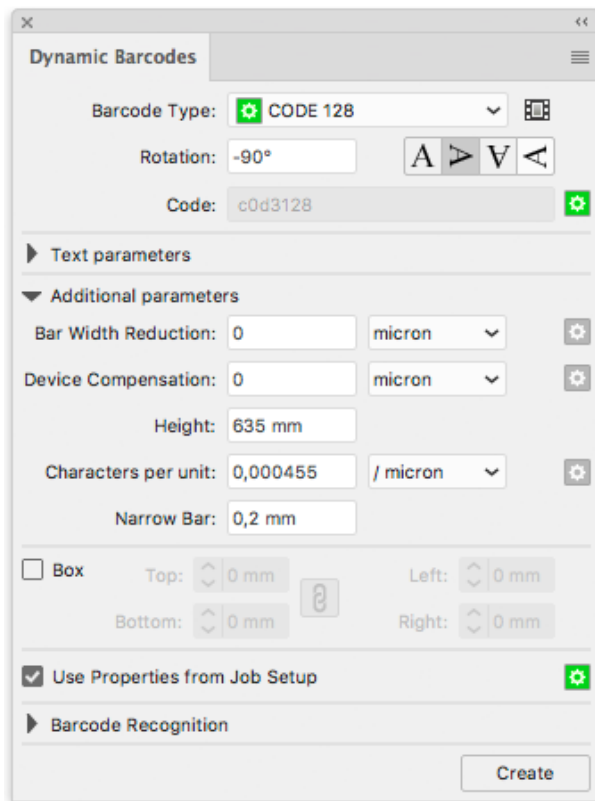
- Gray: the feature is disabled
- Green: the connection is established
- Red: the file is not in a Job Folder, or the connection is down.

5.8.3. Use Barcode parameters from Job Setup

To use the barcode parameters from Job Setup, select a barcode type from the Barcode Type list that is defined in the Job setup. You can recognize these barcode types by the green icon in front.



As soon as you select one of the barcode types defined in the Job Setup, all parameters that are defined in the job setup will be entered (and no longer be editable), indicated by the same green icon.



In the example above, only the **Code** is defined in the Job Setup. All other parameters can be entered freely.

5.8.4. Updating barcode parameters from Job Setup

If a barcode is connected to the Job Setup, any changes to the barcode parameters in the Job Setup, whether it is a changed parameter or a newly added parameter, will automatically and immediately be taken into account in Dynamic Barcodes.

When opening a file, all barcodes with the **Get Properties from Job Setup** option enabled will be updated automatically

If a barcode type is removed from the Job Setup, the corresponding barcodes in the job will no longer be connected, so the **Get Properties from Job Setup** option is disabled.

A barcode will also be disconnected and the **Get Properties from Job Setup** option will be disabled in case the barcode parameters in the Job Setup are invalid for the given barcode type. You will need to change the parameters in the Job Setup. Note that after correcting the parameters, you need to manually reconnect the barcode by enabling **Get Properties from Job Setup**.

6. Free Form Tables

6.1. Introduction

Free Form Tables can be used for creation of tabular artwork - nutrition tables or other - according to the table and data definition in the XML file.

The raw table can be freely re-arranged using the native Adobe Illustrator tools.

Its data content can be changed by the XML update, while maintaining your own table formatting. It can also maintain the formatting after applying minor table geometry changes defined in the new XML.

6.2. Free Form Table XML language

A Free From Table is created from XML files using a specific format.

The XML format used is a standard "GS1 XML Artwork Content Message", so it is the XML file used when Dynamic Content is switched to GS1 mode.

The file consist of two parts:

- The standard GS1 part containing the nutrition content in the way GS1 describes the tables (using structuredCopyElement)
- the **Layout section** describing the table layout

The **Layout section** part uses the specific name space `egt`. Its root node is `egt:freeFormTables`, which is on the same level as the `artworkContentStructuredCopyElement` element, under the `artworkContentPieceOfArt` element.

The **Layout section** can define multiple table layouts. The layouts are distinguished by their unique GS1 instanceSequence number. Each layout can also have its own ID.

6.2.1. XML definition of the Layout section

	Key	Type	Definition
	artworkContentPieceOfArt		The GS1 POA container may contain egt:freeFormTables elements that define the free form tables.
element	<code>egt:freeFormTables</code>	Array	<i>(Optional)</i> A collection of one or more table definitions.

egt:freeFormTables			
element	egt:generator	Dictionary	<i>(Optional)</i> A table layout generator.
element	egt:freeFormTable	Dictionary	<i>(Optional)</i> A table definition.
egt:generator			
element	name	String	<i>(Required)</i> The generator identifier
element	version	String	<i>(Optional)</i> The generator version identifier
egt:freeFormTable			
attribute	id	String	<i>(Required)</i> The name of the table layout definition.
element	egt:sourceReference	Dictionary	<i>(Required)</i> A reference to the table data, located within the current artworkContentPieceOfArt.
element	egt:concatenationStrategy	Dictionary	<i>(Optional)</i> The generic concatenation strategy in the table cells. It can be locally overridden for each table cell.
element	egt:layout	Dictionary	<i>(Required)</i> The layout of the table.
egt:sourceReference			
element	egt:structuredElementTypeName	String	<i>(Required)</i> The name of the structured element containing data. The value has to be "FREE_FORM".
element	egt:instanceSequence	Integer	<i>(Required)</i> The instance sequence of the structured element containing data.
egt:concatenationStrategy			
element	egt:name	String	<i>(Required)</i> The name of the concatenation strategy.
element	egt:delimiter	String	<i>(Required)</i> The delimiter used to concatenate data from multiple

			sources described by egt:copyElementRef into a single cell.
egt:layout			
element	egt:table	Array	<i>(Required, at least 1 entry)</i> The root of the table layout definition. A collection of table row definitions.
egt:table			
element	egt:tr	Array	<i>(Required, at least 1 entry)</i> A definition of one table row. A collection of table cell definitions.
egt:tr			
element	egt:td	Dictionary	<i>(Required)</i> The definition of one cell in the row. The number of egt:td elements shall be equal in each eg:tr element, unless the colspan attribute is used.
egt:td			
attribute	colspan	Integer	<i>(Optional)</i> The definition of the cell span range, a positive integer. The default value is 1. This attribute defines the number of table cells over which this eg:td element spans. The sum of all values (including the default ones) of this attribute over all eg:td elements within a single eg:tr element shall be the same for all eg:tr elements.
element	egt:concatenationStrategy	Dictionary	<i>(Optional)</i> The concatenation strategy for this table cell. The value is inherited from

element	egt:copyElementRef	Dictionary	<p>egt:freeFormTable when not specified.</p> <p>The strategy is applied to the whole egt:td element.</p> <p><i>(Required, it can be repeated)</i> The definition of the cell data content. Each occurrence contains one GS1 triplet reference. If more than one is present, the content is delimited by egt:delimiter.</p>
egt:copyElementRef			
element	egt:copyElementTypeCode	String	<p><i>(Required)</i> The copy element type code of the referred GS1 content element.</p>
element	egt:instanceSequence	Integer	<p><i>(Required)</i> The instance sequence number of the referred GS1 content element.</p>
element	egt:localeSequence	Integer	<p><i>(Required)</i> The locale sequence number of the referred GS1 content element.</p>

6.2.2. Link between the data and the layout

The table cells defined by the **Layout section** refer to GS1 content elements using GS1 triplets, so a combination of a copyElementTypeCode, instanceSequence and localeSequence element.

If the table cell refers to an element that doesn't exist, or if the referred content element doesn't contain any data, no cell object is created.

The structuredCopyElement must contain the "FREE_FORM" in the structuredCopyElementTypeCode element and the matching instanceSequence number to be connected with the freeFormTable section.

6.2.3. Namespace 'egt' and language versioning

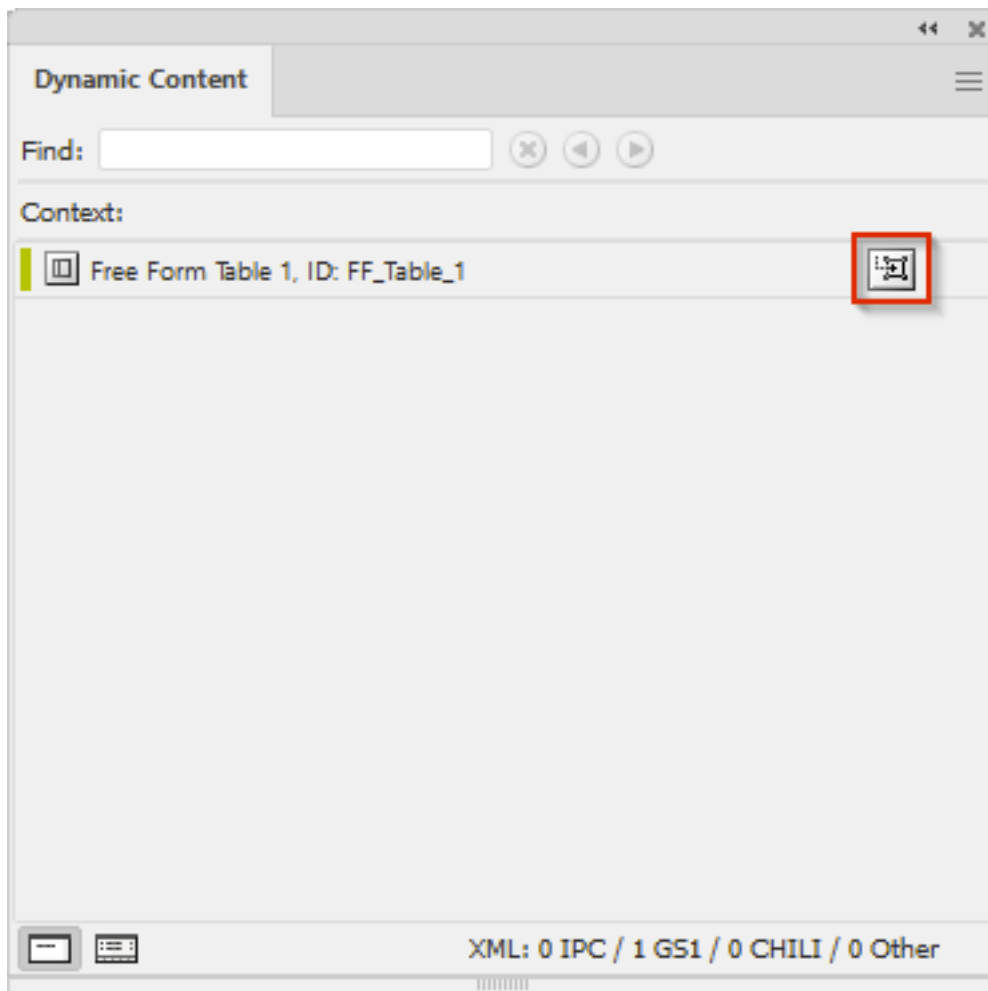
The namespace definition is this:

```
xmlns:egt=http://ns.esko-graphics.com/egt/1.0/
```

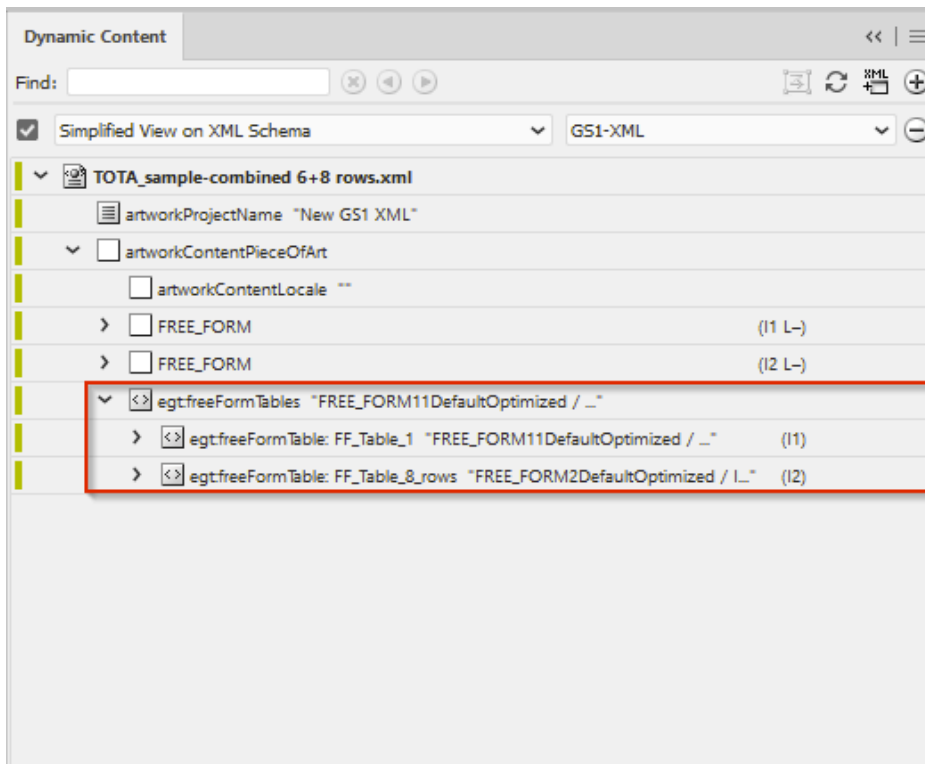
This also encodes the important information about the **Layout section** language version (in the example it's "1.0"). This version number may change with newer generator versions and is compared against the actual version supported by the plug-in. If it doesn't match, you will see a message. The file can still be used, but the layout may look differently than intended, since the current plug-in version may not understand the new features used to describe the table layout. In that case, the unknown commands will be ignored.

6.3. Creating a Free Form Table

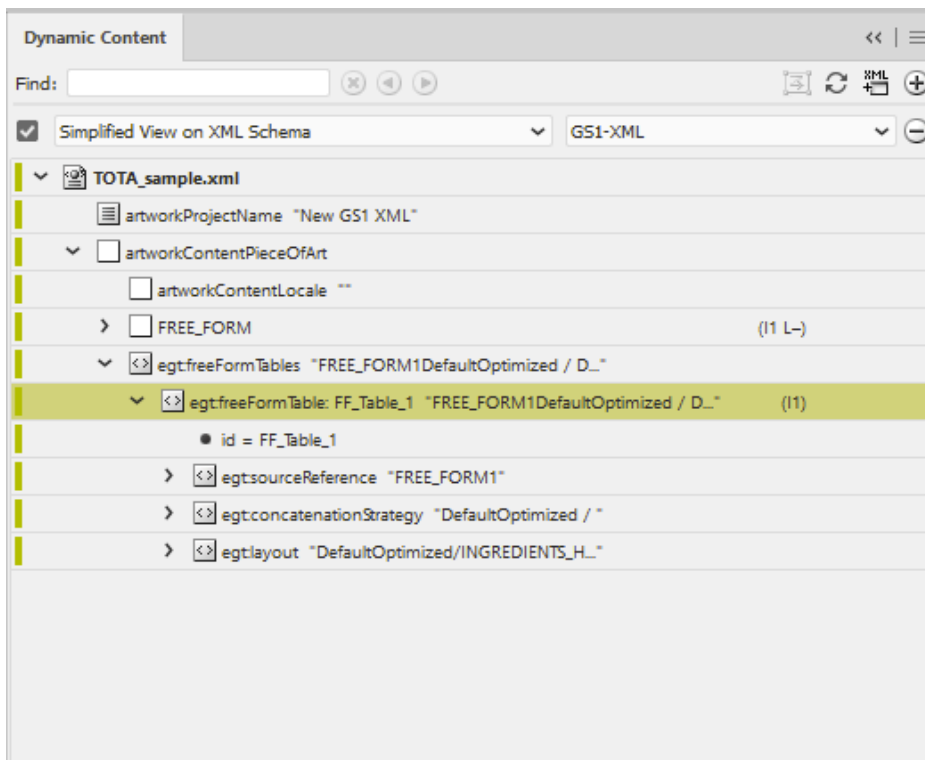
The easiest way to create a Free Form Table, is to use the **Dynamic Content** palette in **Smart View**. In that case, if no object is selected, the only listed records there will be the Free Form Tables. By clicking the button next to the record, the table is created.



In **Advanced View**, you can get the Free Form Table Layout section by choosing **Simplified view on XML Shema - GS1-XML**. The list of Layouts available in the XML file may look like this:



In the example above, the Layout section of the XML contains two table layouts.



To create the Free Form Table, select the freeFormTable element and click the **Make Dynamic Object** button.

- If there is only one table layout, you can select the common freeFormTables element to create the table
- Dynamic Art placeholders can't be used when creating a Free Form Table, and the Auto Link feature has no effect on Free Form Tables.

The table is created using default formatting and in the center of the actual view.

- All cells are generated as text area objects.
- If a cell is defined using the colspan=x attribute, the cell object will span over multiple columns as a single object.
- Default text style is used, with default color and formatting
- All cells are placed with a fixed 10 point spacing.
- Cells are created with a maximum of 3 lines
- The maximum column width is 100 points
- The cell width is set to the width of the widest cell in the column.
- The cell height for all cells in a row is set to the height of the cell with the highest number of lines
- The width of a cell with the "colspan" attribute is a sum of widths of all spanned cells.
- Cells with no content will not be generated
- If the cell definition refers to multiple data sources (concatenated elements), the cell size is not affected and behaves as having a single source only.
- The table is generated as a group of all cell objects.
- The content can't be edited like other dynamic text objects, but the text area and the text formatting can be modified using the normal Adobe Illustrator tools.
- Even though the cells indicate any text overflow, text threading is disabled to cell text objects.

Free Form Table (11)

Ingredienten	Content	% of recommended daily value
Sugar	235g	55%
Proteines	11g	0.3%
Saturated Fat	4g	× Omitted if no data
Sodium	2g	8%

This nutritional facts table serves just for testing purpose! This nutritional facts table serves just for testing purpose! This

6.3.1. Element Concatenation

According to the **FFT XML definition**, the **Layout section** can contain the concatenation definition. This allows to define how multiple GS1 data elements will be joined together in a single Free Form Table cell. The concatenation definition can be set for each Free Form Table, either globally for the whole table, or per cell. The global settings are applied on cells within the current Free Form Table that don't have a concatenation strategy defined.

Concatenation Strategy

The Free Form Table cell may refer to multiple GS1 data elements. The concatenation strategy defines how those elements will be assembled together in the cell. Each layout language version understands a fixed set of strategies (see [Namespace 'egt' and language versioning](#) on page 207).

- At this moment, only the **DefaultOptimized** strategy is supported, which puts elements one after another with the delimiter (see below) in between.
- The **Delimiter** element defines the string, which will be used by the current strategy.
- If no concatenationStrategy is defined on cell level or on the global level, the elements are concatenated without a delimiter.
- If the strategy name is not on the list of supported strategies, no concatenationStrategy is defined.

6.3.2. Cell Protection

Inside the Free Form Table, the cell is protected against content changes.

When the cell is copied and pasted outside the FFT group, the text object loses its protection and becomes editable.

When a cell is deleted from the Free Form Table, a warning message appears. During the next synchronization of the XML content the cell will be regenerated within the Free Form Table as a new cell.

6.4. Updating a Free Form Table

After generating the Free Form Table, you can redesign the table

- You can resize cells
- You can reposition cells
- You can change the text style of the cells

In general, the intention is to keep the formatting after the XML update, either by updating the source XML file or re-linking the file to another one.

When the **cell text content** is changed, the formatting is preserved as for other dynamic text.

When the **table geometry** is changed, the result depends on what changes were made:

1. The cell data assignment - the change of the reference within the cell definition in the **Layout section**

- If the GS1 triplet is already referred to by another cell, the formatting of that instance is copied and applied to the new cell.
 - If the GS1 triplet is newly used and is not yet referred to by another cell, the new text takes over the existing formatting of the cell.
 - If both of these changes happen to the existing cell, the cell size and position is not affected.
2. The table geometry changes: the number of rows or columns in the **Layout section** changes
- If the position of the new row or column can be detected, it will be added in between the others. If it's not possible to find its place, the new row or column is added at the bottom or right side of the table.
 - The size of the added row or column is deducted from the existing table layout.
 - If a newly created cell refers to data used by an existing cell in the table, the new cell takes the formatting of the existing cell
 - If a newly created cell refers to data that isn't used anywhere in the table yet, the cell takes over the formatting of the closest cell (first the cell on its left, if nothing can be found there the cell above, and so on clockwise).