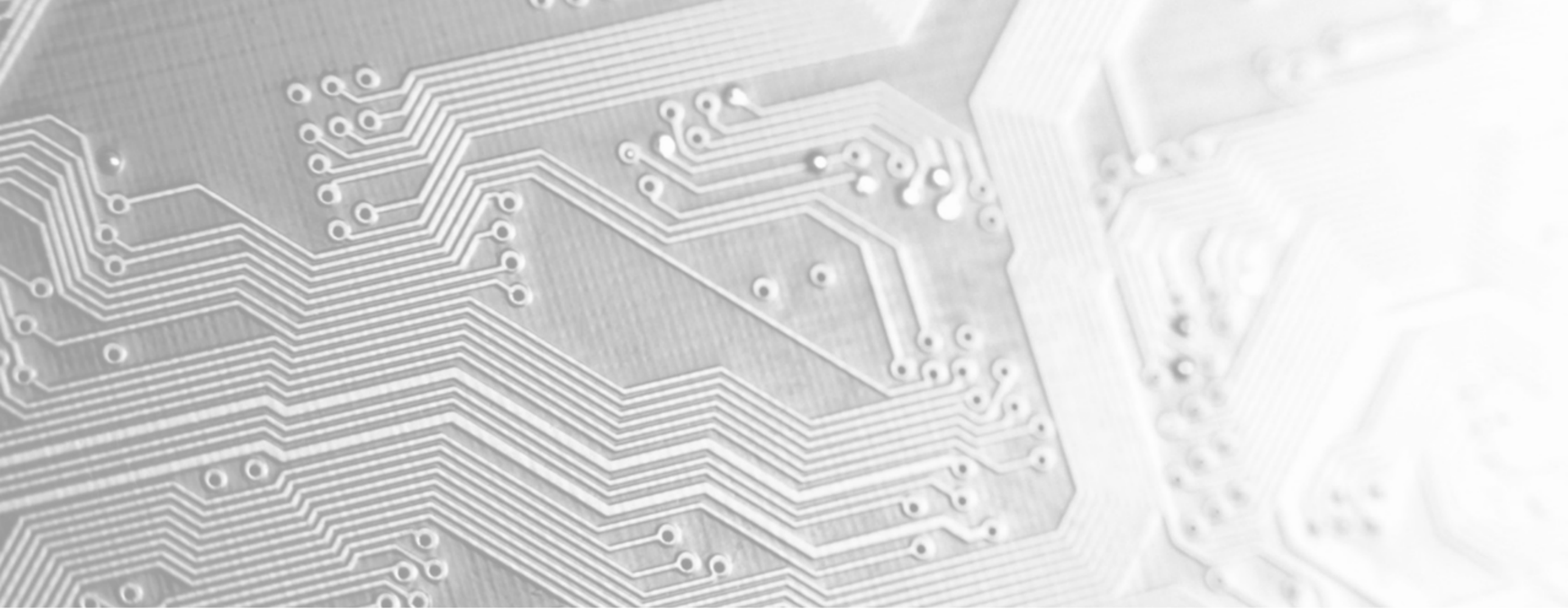


Integr8tor v2016.12

Ucamco

CONFIDENTIAL

Integr8tor

Version 2016.12

64 Bit

Multi Core

Integr8tor v2016.12

Introduction

Ucamco are pleased to announce the release of Integr8tor v2016.12.

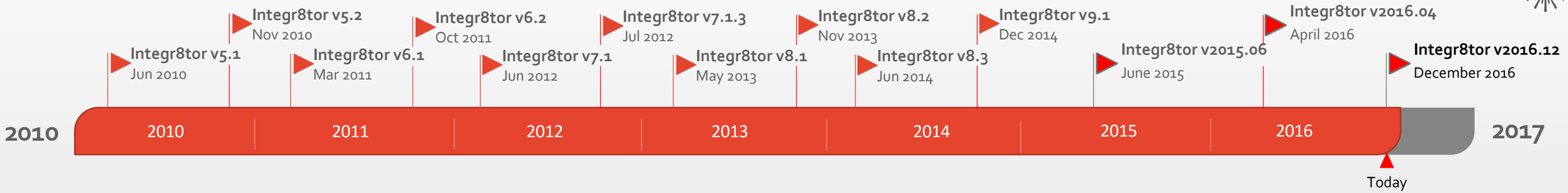
This release features important extensions and enhancements to existing functionality and addresses a number of software inconsistencies that were reported by our Integr8tor user base.

The current release notes take you through the version's highlights. They also contain important information for correct setup and optimal use of the product. Please take a moment to browse them through.

We recommend you to upgrade to v2016.12 at your earliest convenience and thank you for choosing a Ucamco product.

Integr8tor v2016.12

Commitment to regular updates



Version	Release date	Highlights	
5.1	Jul-10	Multiple job submit via email.	CAM input report.
5.2	Nov-10	Copper clearances by type.	Scoring calculation.
6.1	Mar-11	Perspectives in Cockpit.	Improved performance.
6.2	Nov-11	Multiple QED reports.	Exposed copper calculation.
7.1	Jun-12	Localized interface.	Line width on planes.
7.1.3	Jul-12	Bug fix release for 'recovered job'.	
8.1	May-13	Support for ODB++ v7.	Compatible with Windows server 2012 and windows 8.
8.2	Nov-13	Detection and flagging of duplicate archives.	Edge connector recognition.
8.3	Jun-14	New standard parameters.	Determination of laser/mechanical drilling.
9.1	Dec-14	Support for Gerber X2 datasets.	Optimized and new QED values.
2015.06	Jun-15	New standard parameters.	Determination of laser/mechanical drilling.
2016.04	Apr-16	SMD/BGA pads differentiates copper- and solder mask defined	DFM Checks (former Capabilities) revised
2016.12	Dec-16	Introducing Integr8tor Job Perspectives	Drill hole tolerances

Integr8tor v2016.12

Extensions and Enhancements

NEW

- Introducing Integr8tor Job Perspectives
- Support for both symmetrical and non-symmetrical drill hole tolerances
- Extended support for finished hole size to drill tool diameter calculation using Visual Hyperscript (VHS) automation
- Extensions to the Drill Editor to support additional drill hole characteristics
- Bi-directional link with UcamX Drill Tool Manager
- Fully revised Integr8tor exports specification section allowing to output data from different perspectives
- Checkpoint and DFM Review running as locally installed client applications, reducing network load and enhancing application start-up times

Integr8tor v2016.12

Perspectives – What are they?

- Perspectives are different views on the same Integr8tor job data.
- Each perspective considers the same Integr8tor data from a different angle or with a different intention in mind.
- The basic Integr8tor job perspective is the “original job”.
- The “original job” perspective represents the original incoming customer data.

Integr8tor v2016.12

Perspectives – What are they?

- Integr8tor v2016.12 introduces the first two of a series of additional perspectives:
  - Drill tool compensated perspective
  - Etch compensated perspective
- The Drill tool compensated perspective stores the Integr8tor job data in which the incoming finished holes sizes have been modified to reflect drill tool diameters.
- The Etch compensated perspective accommodates the Integr8tor job data in which an etch compensation has been applied to the incoming copper layers.

Integr8tor v2016.12

Perspectives – Usage and benefits

- ***"What can perspectives do for me?"***
  - When discussing layout-related issues or questions with your customer, you want to be able to refer to the original data he supplied. Non-original data in this case would only lead to misunderstandings
  - But looking downstream towards your production capabilities, you may want to take into consideration a slightly modified version of this customer data set:
    - When doing an annular ring analysis, you might want it to take into account drill tool diameters, rather than the customer-supplied finished hole sizes
    - To evaluate how easy or difficult the product will be to etch, you may want the QED analysis and reporting tools to take into account an etch-compensated version of the copper data, rather than the copper in the original design
    - …

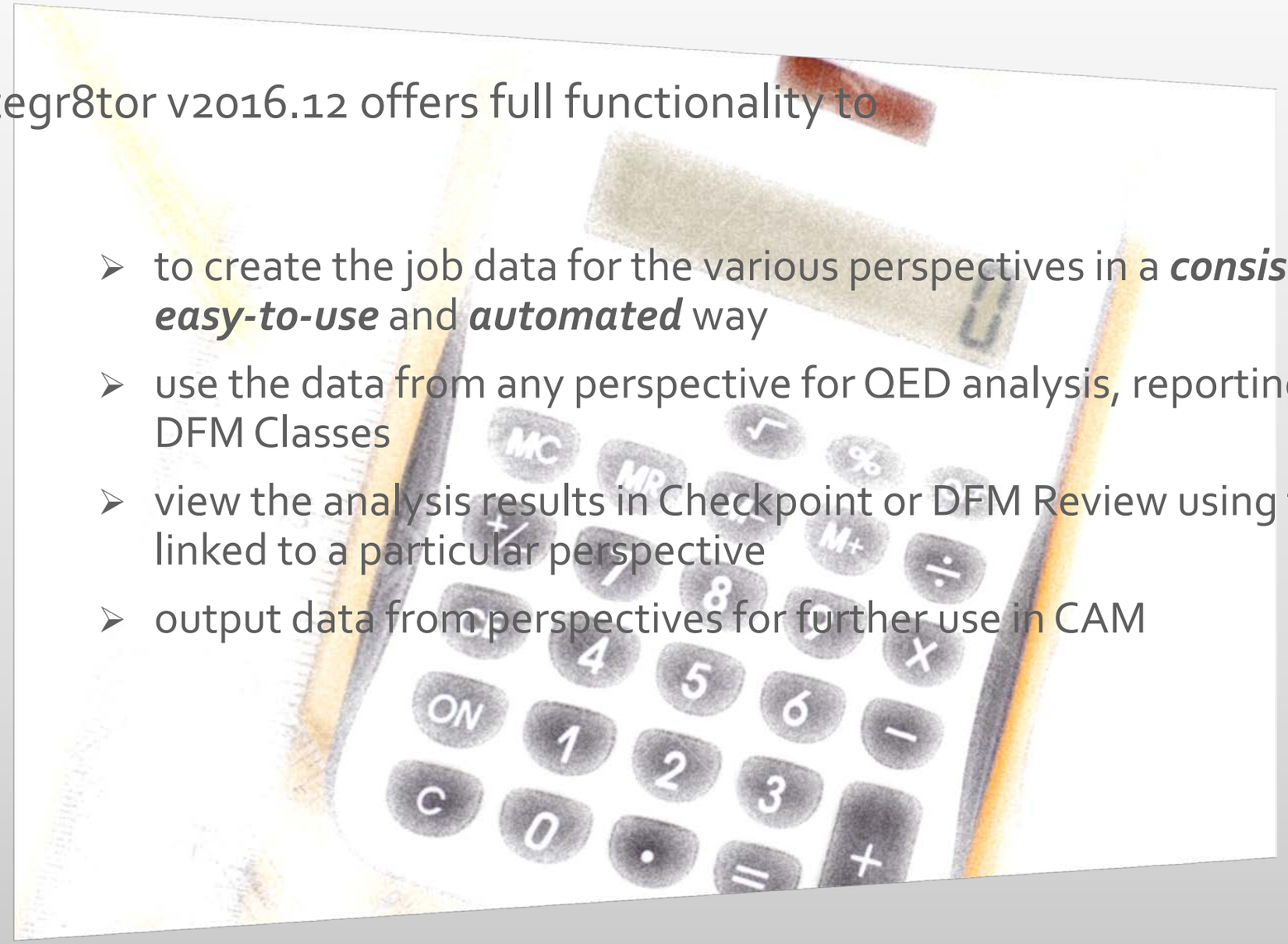
Integr8tor v2016.12

Perspectives – Usage and benefits

- Here is where ***Integr8tor perspectives*** come in:
  - Perspectives offer an efficient way for storing different views on the same Integr8tor job side by side.
  - They provide an elegant and user-friendly way to access the correct data at the time you need it.
  - Perspectives are built on a per-job basis: a more complex product may be easier to assess with the help of one or two extra perspectives while a run-off-the-mill board might be assessed just from original data.
  - They provide QED analysis, Checkpoint, DFM Classes, DFM Review with additional data, enabling them to produce ***more complete*** and ***to-the-point*** results.
  - Their generation is transparent to the user: when a job completes in Integr8tor, the requested perspectives are available for further use.

Integr8tor v2016.12

Perspectives – Usage and benefits



- Integr8tor v2016.12 offers full functionality to
  - to create the job data for the various perspectives in a ***consistent***, ***easy-to-use*** and ***automated*** way
  - use the data from any perspective for QED analysis, reporting and DFM Classes
  - view the analysis results in Checkpoint or DFM Review using the data linked to a particular perspective
  - output data from perspectives for further use in CAM

Integr8tor v2016.12

Perspectives – Usage and benefits

- QED analysis results from various perspectives are available for insertion in one single or in multiple dedicated QED PDF reports.

Summary - Sequences - Original

Type	Sequences	Tools	Min. End Dia.	Max. End Dia.	Holes	Min. Ring on Outer	Min. Ring on Inner	Min. Clr. Hole to Copper
			mm	mm		mm	mm	mm
Blind	0							
Buried	0							
PTH	1	6	0.300	3.300	1949	0.149	0.150	0.247
Plated (Total)	1	6	0.300	3.300	1949	0.149	0.150	0.247
NPTH	0							
Total	1	6	0.300	3.300	1949	0.149	0.150	0.247

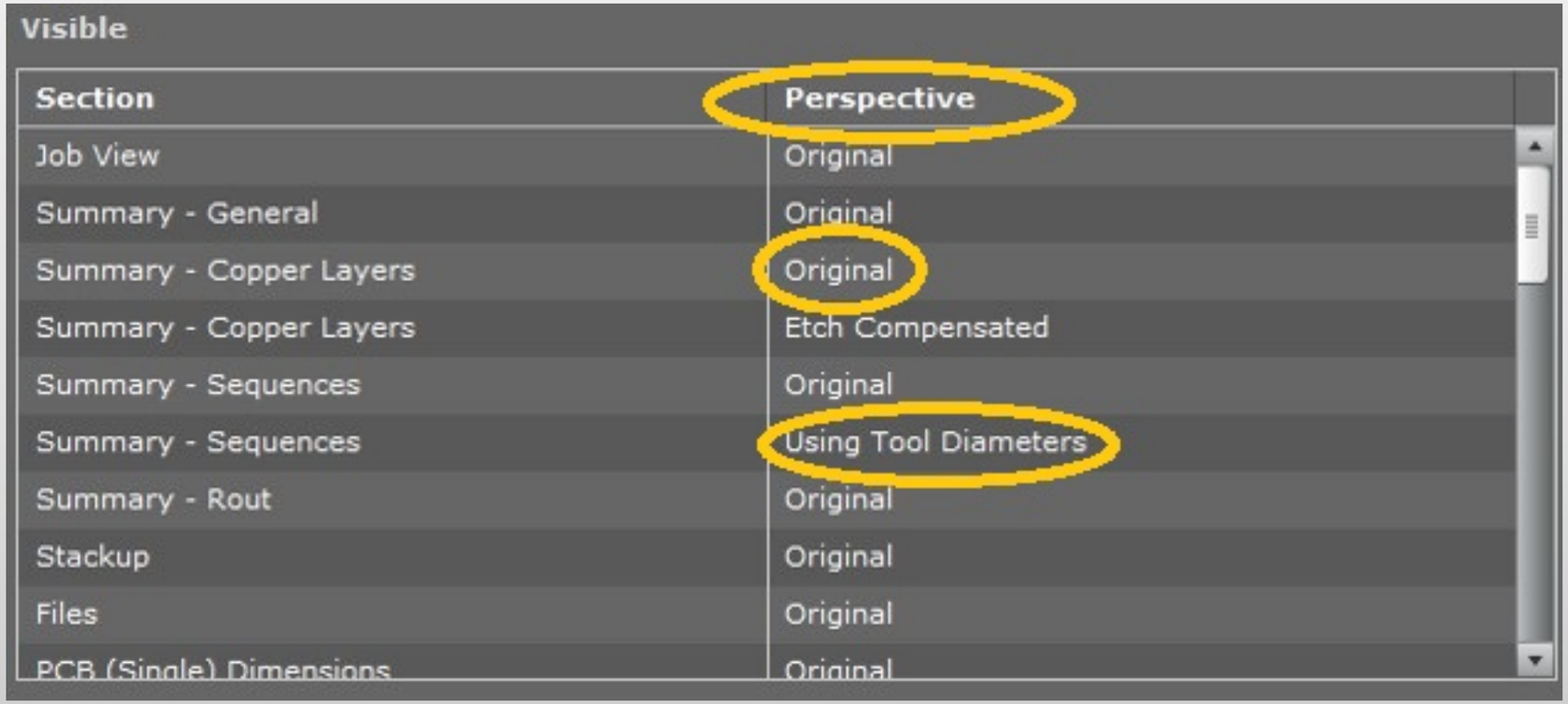
Summary - Sequences - After Tool Compensation

Type	Sequences	Tools	Min. End Dia.	Max. End Dia.	Holes	Min. Ring on Outer	Min. Ring on Inner	Min. Clr. Hole to Copper
			mm	mm		mm	mm	mm
Blind	0							
Buried	0							
PTH	1	6	0.400	3.350	1949	0.099	0.100	0.197
Plated (Total)	1	6	0.400	3.350	1949	0.099	0.100	0.197
NPTH	0							
Total	1	6	0.400	3.350	1949	0.099	0.100	0.197

Integr8tor v2016.12

Perspectives – Usage and benefits

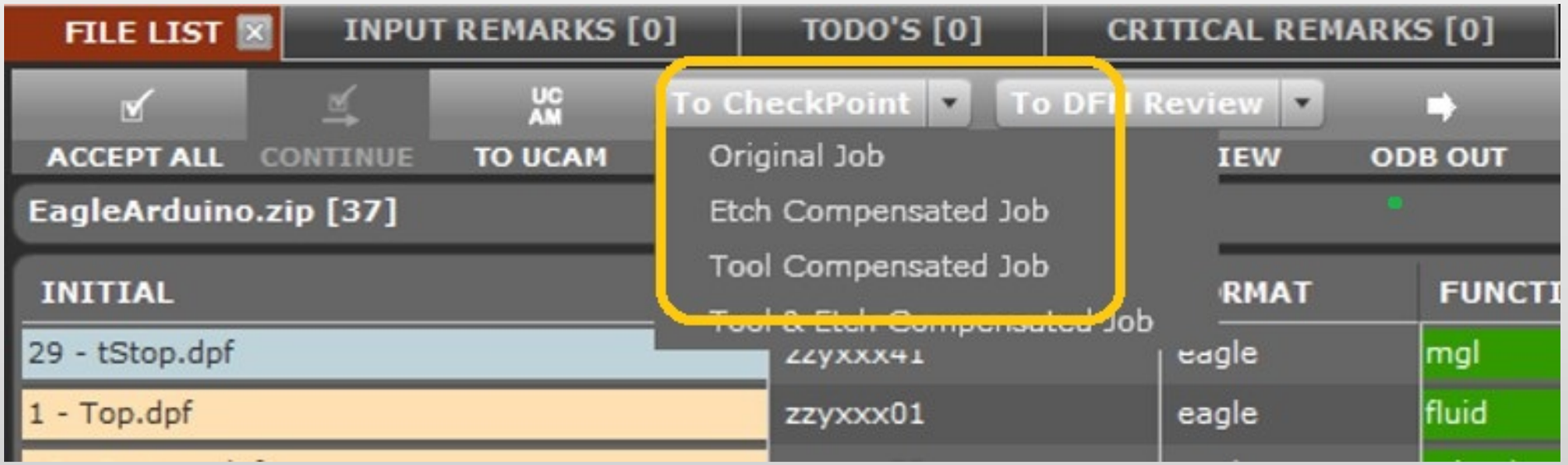
- Integr8tor's QED report layout configurator allows to either combine analysis results from different perspectives into a single PDF report or – alternatively – split them into multiple PDF reports:



Integr8tor v2016.12

Perspectives – Usage and benefits

- CheckPoint und DFM Review have been upgraded to allow convenient access to the data and analysis results from the different perspectives:



Integr8tor v2016.12

Perspectives – License info

- The drill tool compensated perspective and related functionality is a licensed feature but it is available ***free-of-charge*** to Integr8tor maintenance and warranty customers

  FEATURE g9680090 maniab 2017.010 31-jan-2017 3 VENDOR_STRING="I8 Drill Tool Compensated Perspective"

- Important

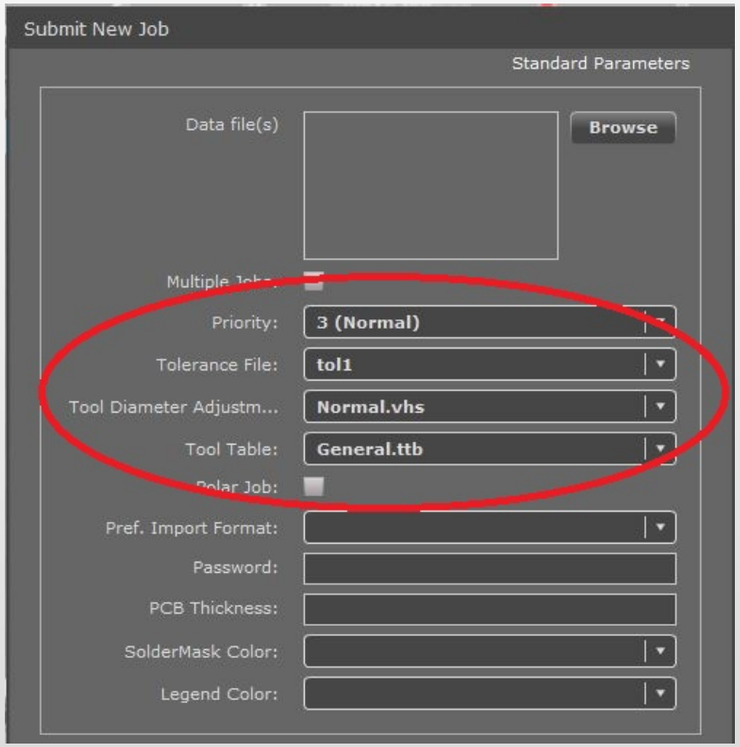
  Earlier Integr8tor versions offered a light-weight system to convert finished hole sizes to drill tool diameters using a tool table (ttb). As of Integr8tor v2016.12 this mechanism also requires the above-mentioned license key in your license file

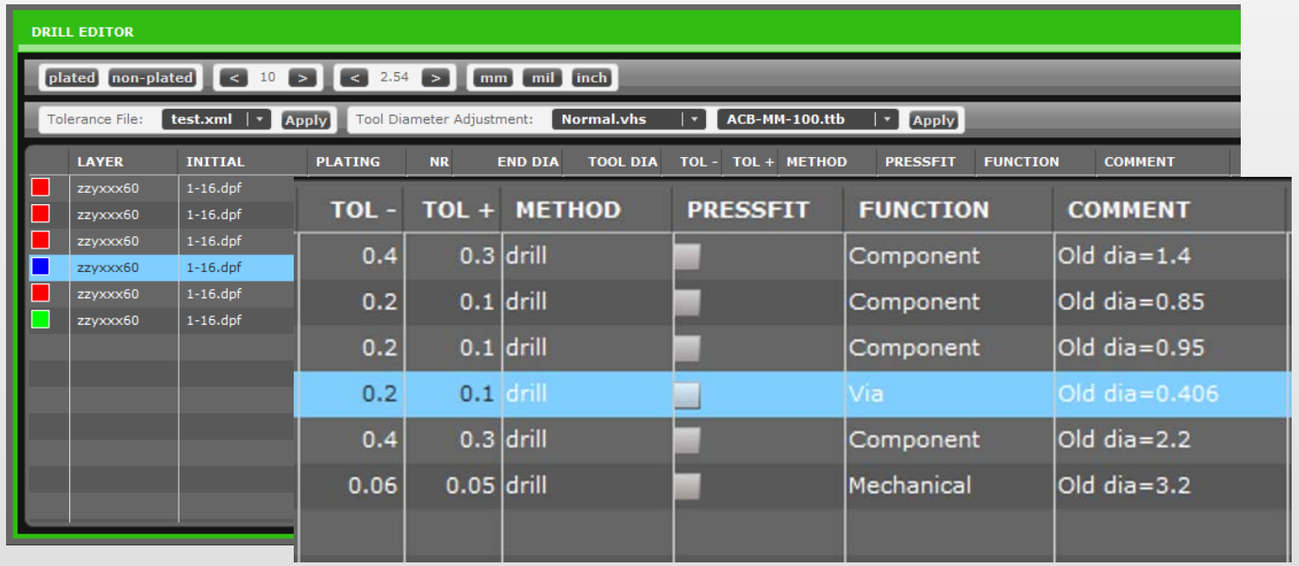
  If you were using tool tables in Integr8tor before, please contact license.eur@ucamco.com and request a license file upgrade prior to installing the V2016.12 release. Again, as a maintenance or warranty customer this upgrade is free of charge

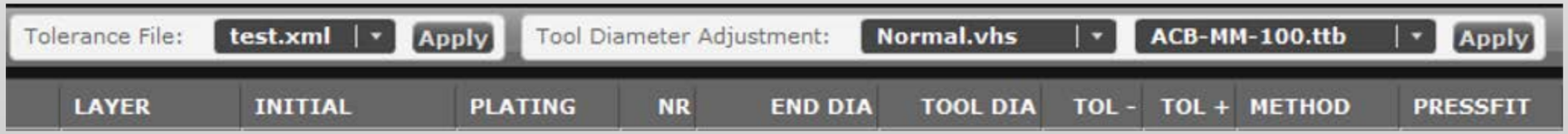
- The Etch compensated perspective and related tools is available as a licensed cost option

Integr8tor v2016.12

Drill compensated perspective







Integr8tor v2016.12

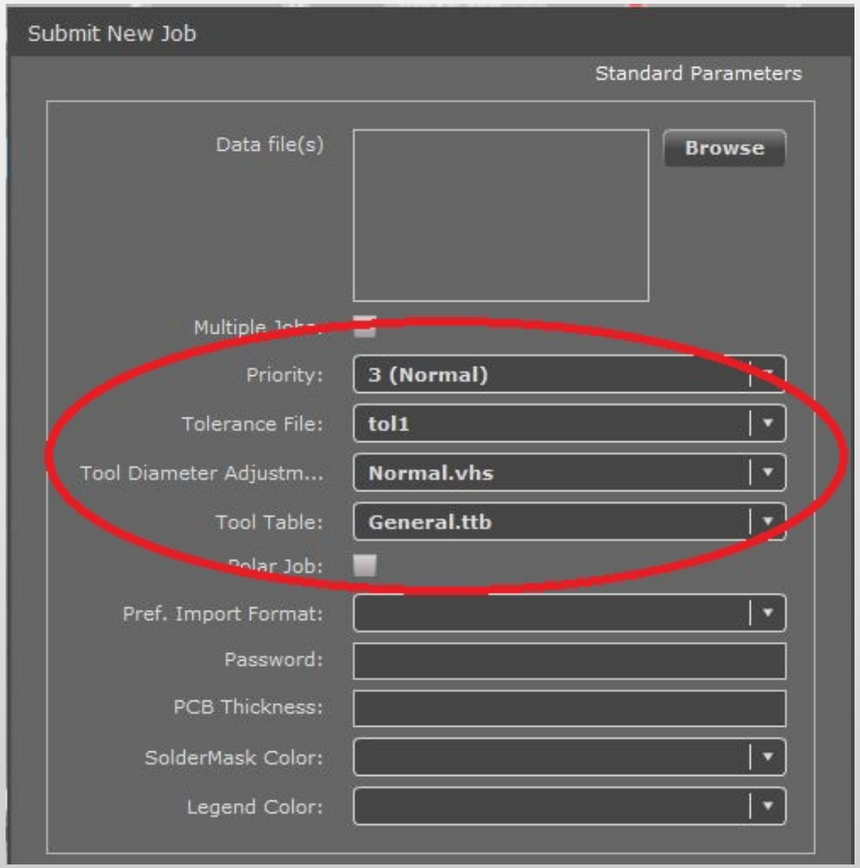
Drill Tool Compensated Perspective

- ***"What is it?"***

  The Drill tool compensated perspective accommodates all data related to the job in which the finished hole sizes have been modified to drill tool diameters.

  In addition it offers ***advanced new functionality*** to do sophisticated finished hole size to drill tool diameter calculations

- After upgrading your license file, the v2016.12 Submit New Job dialogue will feature 3 input options for setting up a job with a drill tool compensated perspective:
  - Tolerance File
  - Tool Diameter Adjustment
  - Tool Table



Integr8tor v2016.12

Drill Tool Compensated perspective

- *Tolerance file*

  An XML file as generated from

  UcamX > Setup > Drill > Drill Tool Tolerances…

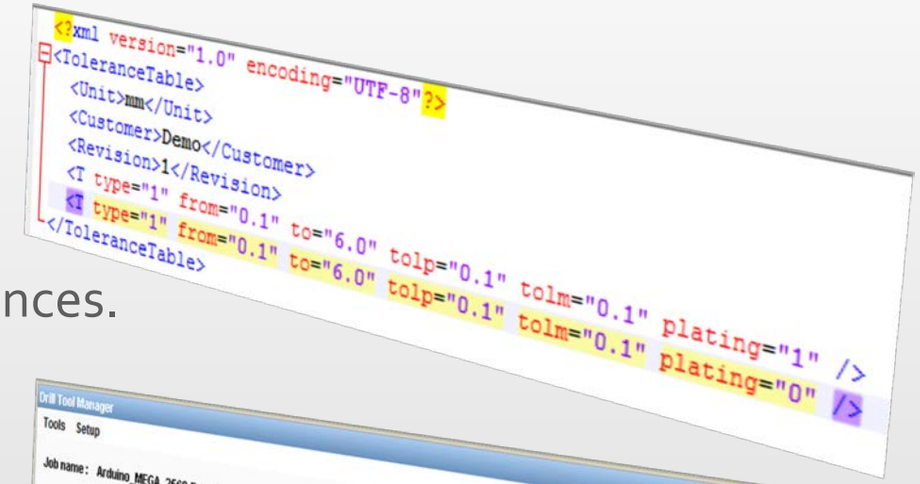
  It contains the rules for setting the default +/- drill tool tolerances. Several of these files can be installed

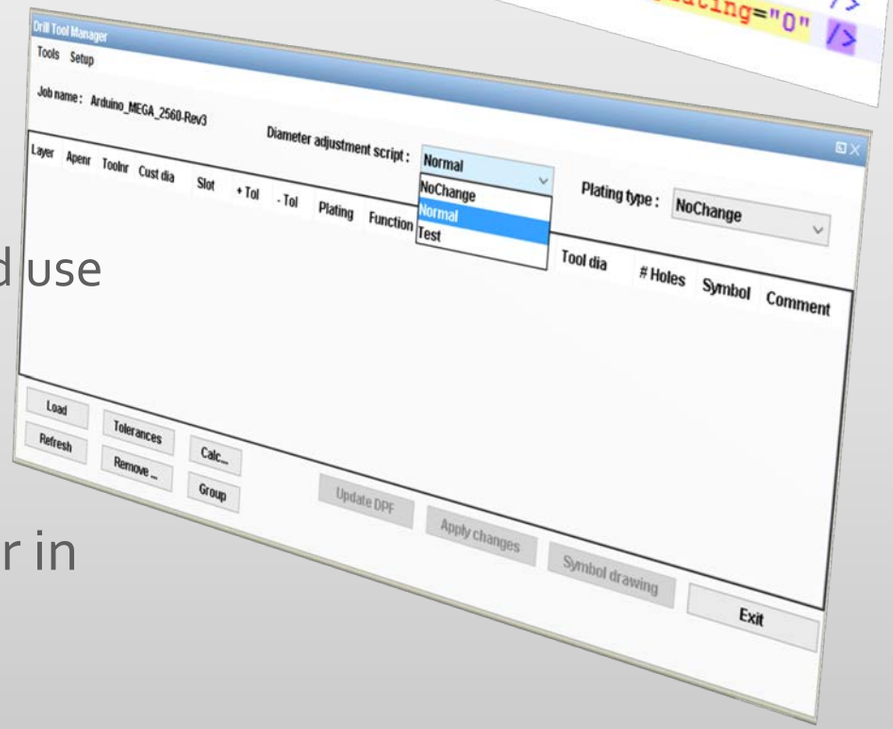
- *Tool Diameter Adjustment*

  A VHS Automation script (.vhs) as used in UcamX' Drill Tool Manager. This script can evaluate drill tool characteristics and use this info to calculate a new tool diameter

- *Tool Table*

  A tool table (.ttb) as used in earlier Integr8tor versions or in UcamX Autodrill





Integr8tor v2016.12

Drill Tool Compensated perspective

- Choose any combinaton of the 3 drill tool compensation options and submit the job
- When taking the job into the v2016.12 version of Drill Editor, the enhanced user interface allows you to modify – if required – an newly introduced set of additional drill hole characteristics:
  - Tolerance + and – for every individual hole size - both symmetrical and non-symmetrical tolerances are supported
  - Method of hole creation (mechanically, laser drill, peck drill,…)
  - Is this hole size meant for a pressfit connector?
  - Is this a component or a via hole?
- Any values or attributes assigned here can be taken into account by the VHS Automation script to influence the drill tool diameter calculation

TOL -	TOL +	METHOD	PRESSFIT	FUNCTION	COMMENT
0.4	0.3	drill		Component	Old dia=1.4
0.2	0.1	drill		Component	Old dia=0.85
0.2	0.1	drill		Component	Old dia=0.95
0.2	0.1	drill		Via	Old dia=0.406
0.4	0.3	drill		Component	Old dia=2.2
0.06	0.05	drill		Mechanical	Old dia=3.2

Integr8tor v2016.12

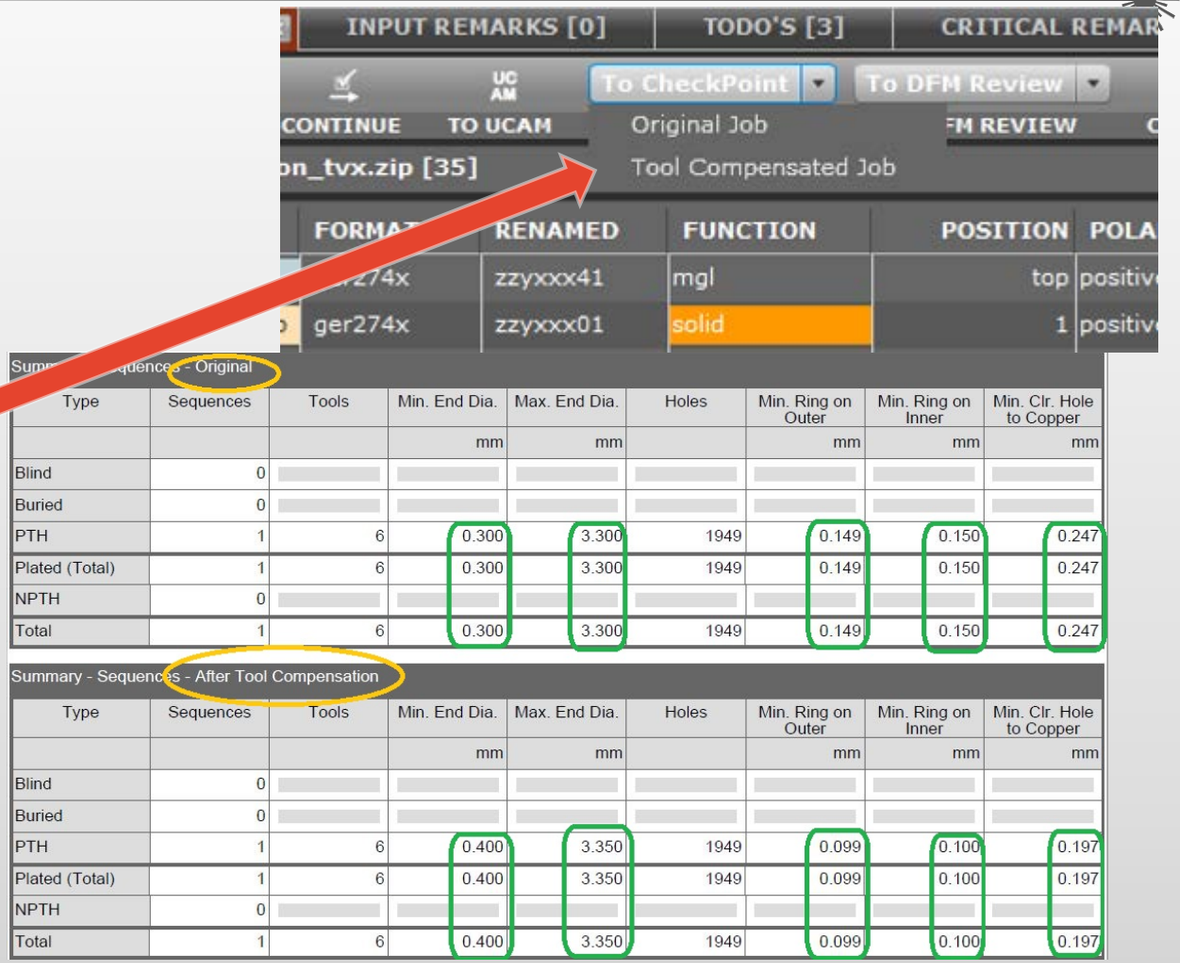
Drill Tool Compensated perspective

- v2016.12 Drill Editor comes with a handy menu bar at the top to select a different tolerance file, VHS drill diameter adjustment script or tool table file
- Re-select any of these 3 and press the corresponding Apply button to see the new resulting drill tool diameter ***instantaneously***
- Any calculation results can still be manually overruled by entering the desired diameter value in the END DIA column

Integr8tor v2016.12

Drill Tool Compensated perspective

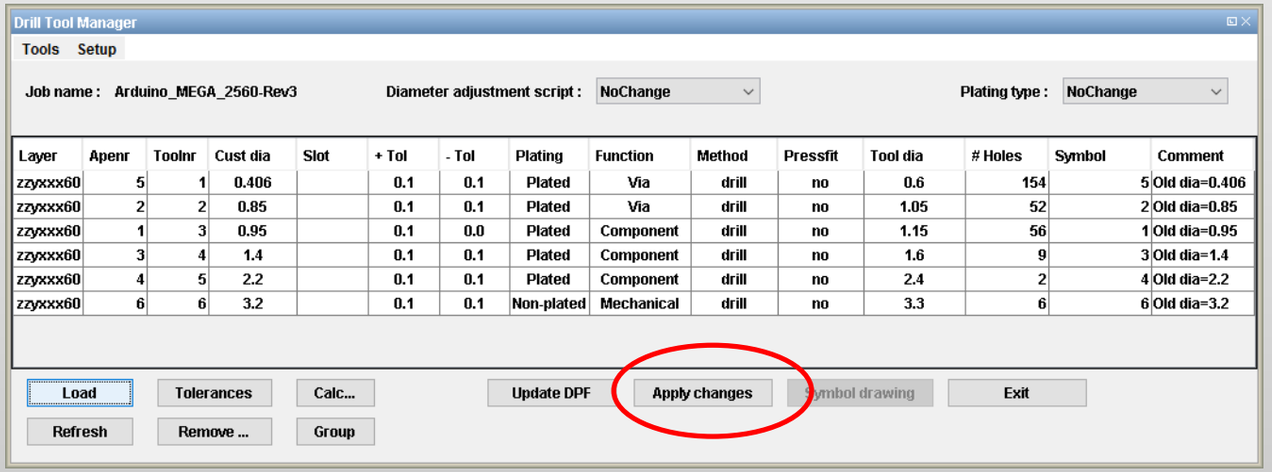
- The Integr8tor analysis is performed taking into account both the incoming finished hole sizes as well as the compensated drill tool diameters
- Resulting Integr8tor data is stored in 2 perspectives:
  - Original job
  - Tool compensated job
- Both perspectives can be polled for data to build QED PDF report or do CheckPoint reviews



Integr8tor v2016.12

Drill Tool Compensated perspective

- The Drill Tool Compensated perspective has been streamlined with UcamX' Drill Tool Manager to provide a ***perfect integration***
- Integr8tor jobs with a Drill Tool Compensated perspective seamlessy exchange all relevant drill tool parameters with UcamX v2016.11 and higher.
- Integration is 2-way: changes to drill tool compensation info in one application are picked up ***transparently*** by the other…



Integr8tor v2016.12

Drill Tool Compensated perspective – Setup and configuration

2 Setup areas within Integr8tor for storing drill tool compensation configuration files:

- Standard samples provided with the Integr8tor distribution are stored in

  C:\ucamco\Integr8tor\webapps\ROOT\WEB-INF\setups

\toleranceFile	Default drill tolerances (xml)
\tdaScripts	Tool Diameter Adjustment scripts (vhs)
\tableFiles	Tool Table Files (ttb)

  This location is overwritten during an Integr8tor update

- Customized setup files should be stored in

  C:\ucamco\Integr8tor\webapps\ROOT\WEB-INF\setups\custom

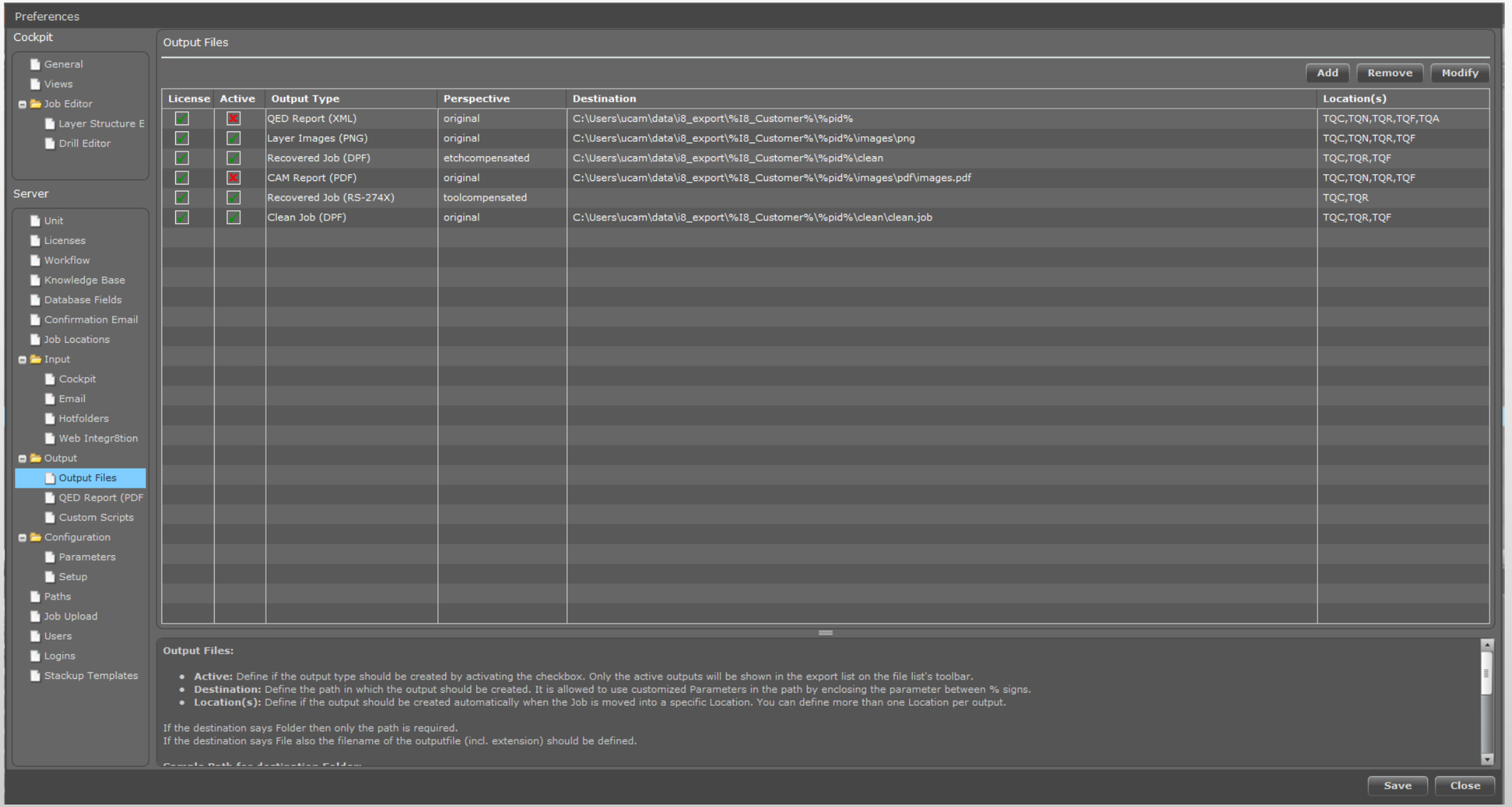
  \toleranceFile

  \tdaScripts

  \tableFiles

Integr8tor v2016.12

Enhanced Output Files section



Integr8tor v2016.12

Enhanced exports setup section

- The Integr8tor v2016.12 Preferences dialogue features a fully re-designed section for configuring the Integr8tor outputs
- Depending on the installed licenses, data from different perspectives can be brought to the outside in a variety of formats

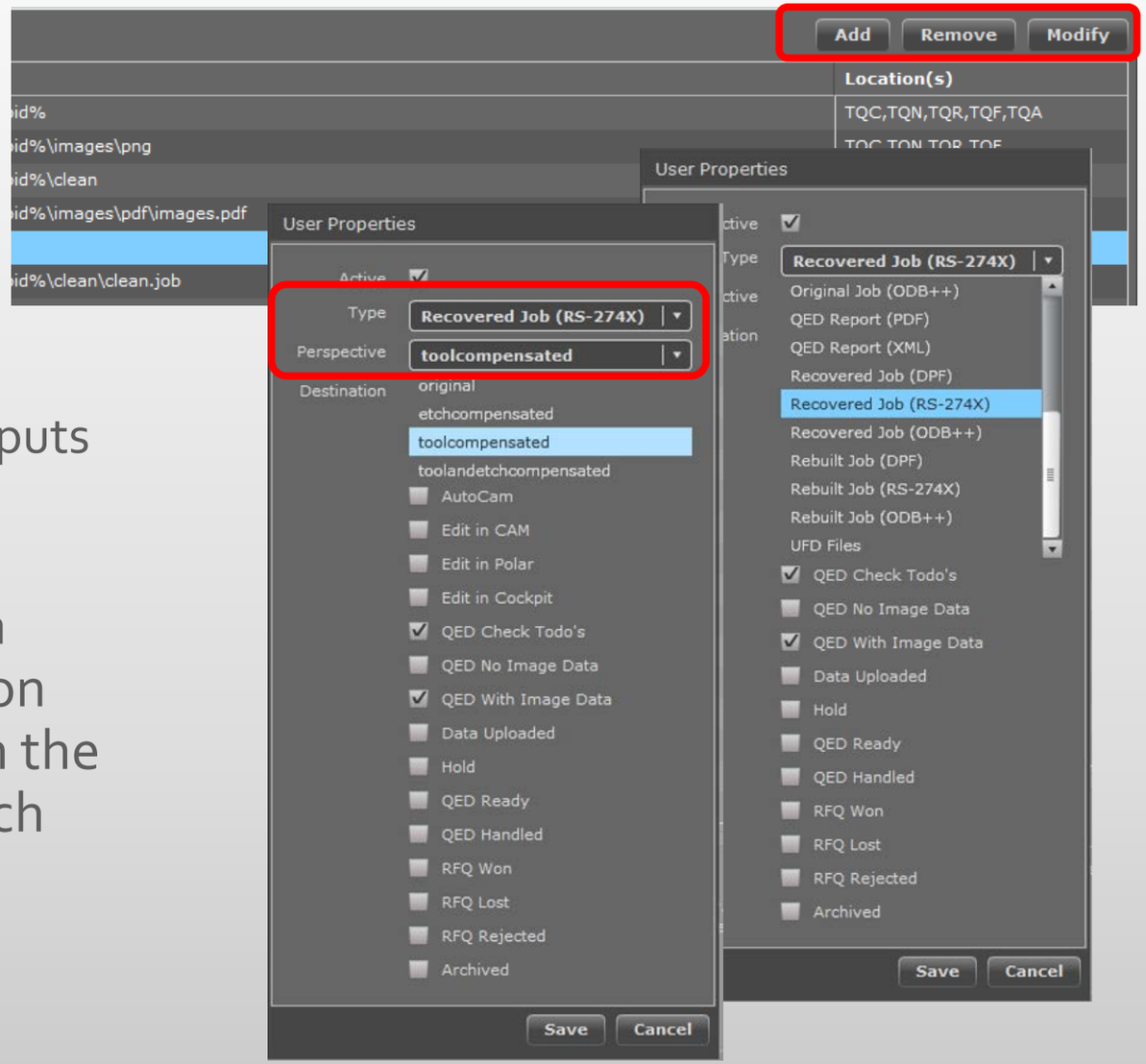
License	Active	Output Type	Perspective	Destination
✓	✗	QED Report (XML)	original	C:\Users\ucam\data\i8_export\%I8_Customer%\%pid%
✓	✓	Layer Images (PNG)	original	C:\Users\ucam\data\i8_export\%I8_Customer%\%pid%\images\png
✓	✓	Recovered Job (DPF)	etchcompensated	C:\Users\ucam\data\i8_export\%I8_Customer%\%pid%\clean
✓	✗	CAM Report (PDF)	original	C:\Users\ucam\data\i8_export\%I8_Customer%\%pid%\images\pdf\images.pdf
✓	✓	Recovered Job (RS-274X)	toolcompensated	
✓	✓	Clean Job (DPF)	original	C:\Users\ucam\data\i8_export\%I8_Customer%\%pid%\clean\clean.job

Integr8tor v2016.12

Enhanced exports setup section

- Easy-to-use dialogues allow picking
  - ➢ the desired Integr8tor job (Original-Recovered-Clean)
  - ➢ the correct perspective (Original-toolcompensated-etchcompensated)
  - ➢ the required DPF, RS-274X or ODB++ outputs

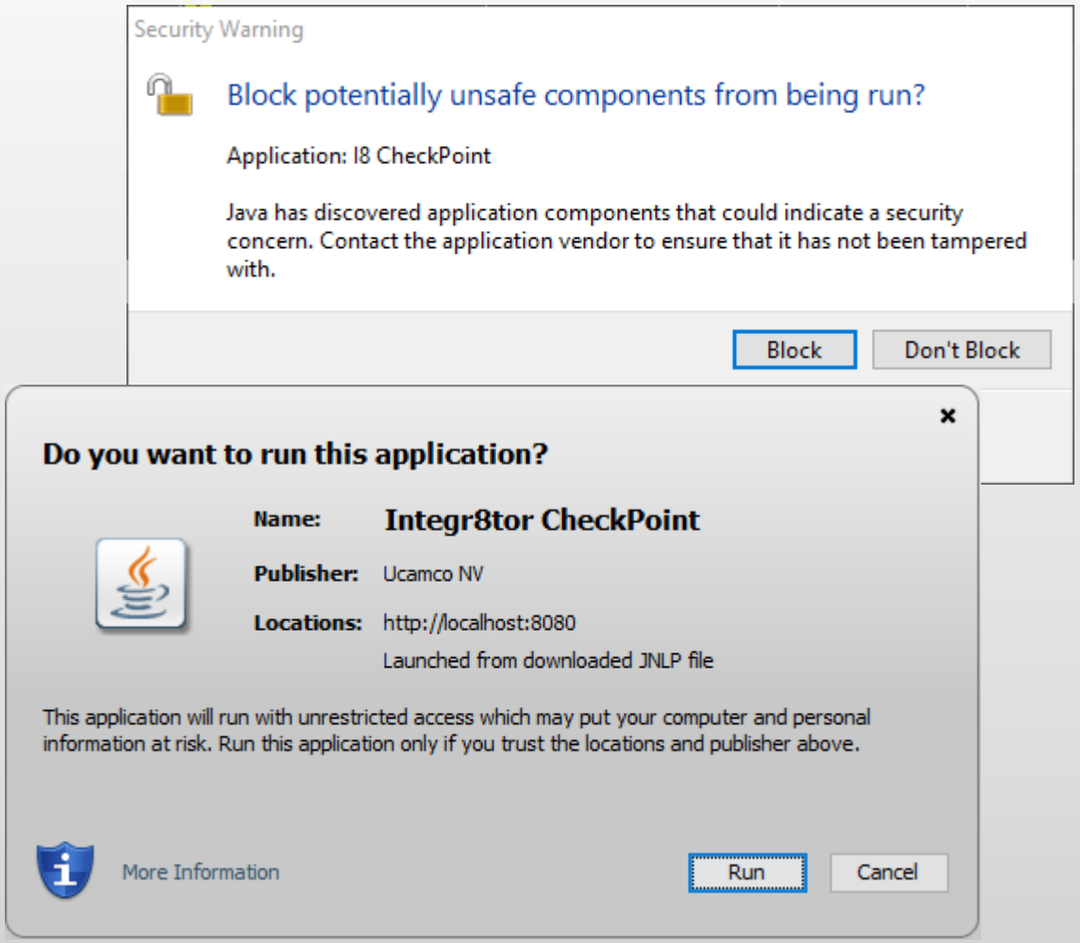
  for further processing in CAM
- If your CAM software does not feature a fully-fledged etch compensation function for instance, simply feed your CAM with the data you extracted from Integr8tor's etch compensated job perspective



Integr8tor v2016.12

Running CheckPoint and DFM Review as client applications

- In pre-v2016.12 versions of Integr8tor, CheckPoint and DFM Review have been launched as Java Webstart Applications
- This technique does not require the CheckPoint or DFM Review application software to be installed locally on the client but may have some downsides:
  - Reduced start-up and application response times on heavily solicited networks
  - Pop-ups during application startup, inherent to increasingly tightened security in Java Webstart



Integr8tor v2016.12

Running CheckPoint and DFM Review as client applications

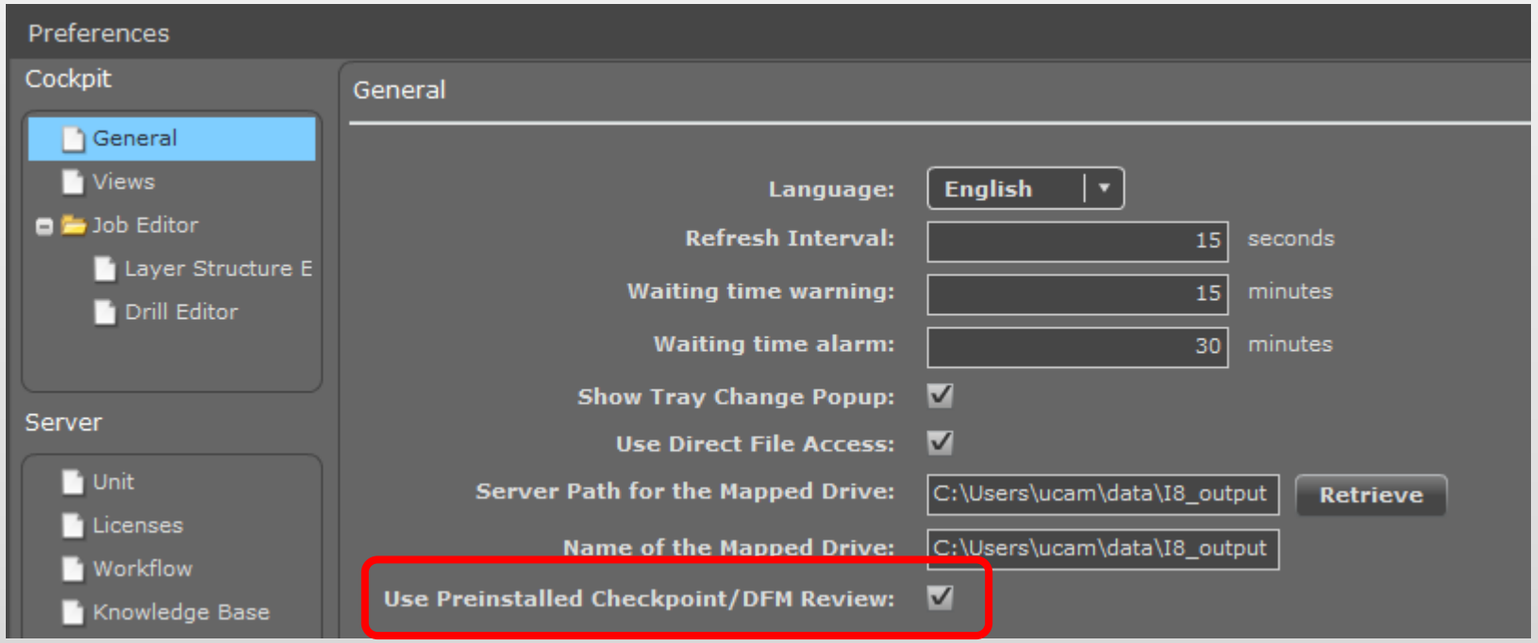
- Integr8tor v2016.12 offers the choice between
  - launching CheckPoint/DFM Review as a Java Webstart Application like before
  - Running Checkpoint/DFM Review locally on the Integr8tor client(s)
- To run Checkpoint/DFM Review locally
  - Download the dedicated installer CheckPoint_v2016.12-*date*_x64.exe

    ftp://ftp.ucamco.com/Integr8tor
  - Run the installer on the client computer(s)
  - Accept the default answers to the installation questions

Integr8tor v2016.12

Running CheckPoint and DFM Review as client applications

- When the installation finishes, go to Cockpit Preferences, tab Page General and activate the "Use Preinstalled Checkpoint/DFM Review" option



- To revert to Java Webstart, simply de-activate the option

Integr8tor v2016.12

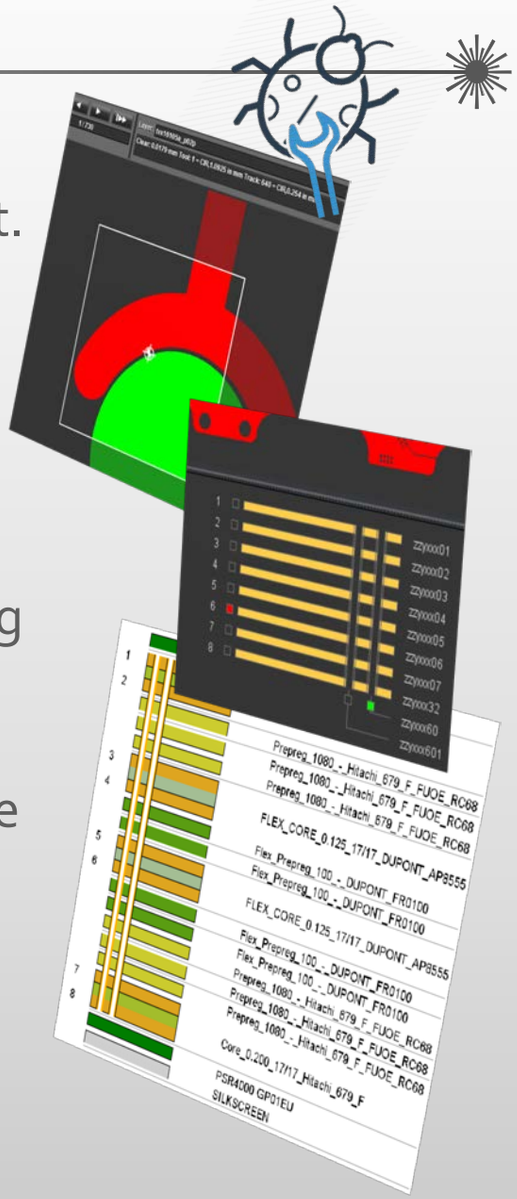
Code fixes

- ✓ A case-sensitivity issue while performing the functions "To Ucam" or "Check-Out/Check-in to ODB++" could corrupt the archive file list in Cockpit when the job returned to Integr8tor.
- ✓ Under circumstances, copper pads embedded in a larger copper plain could get removed inadvertently during AutoCAM
  This version addresses this issue
- ✓ v2016.12 fixes an issue with the reading/merging of relevant .xjd files to solve a priority issue on common parameters
- ✓ A new Cockpit version (16.01-39) solves an issue with drag-and-dropping copper layers in the Layer Structure Editor

Integr8tor v2016.12

Code fixes

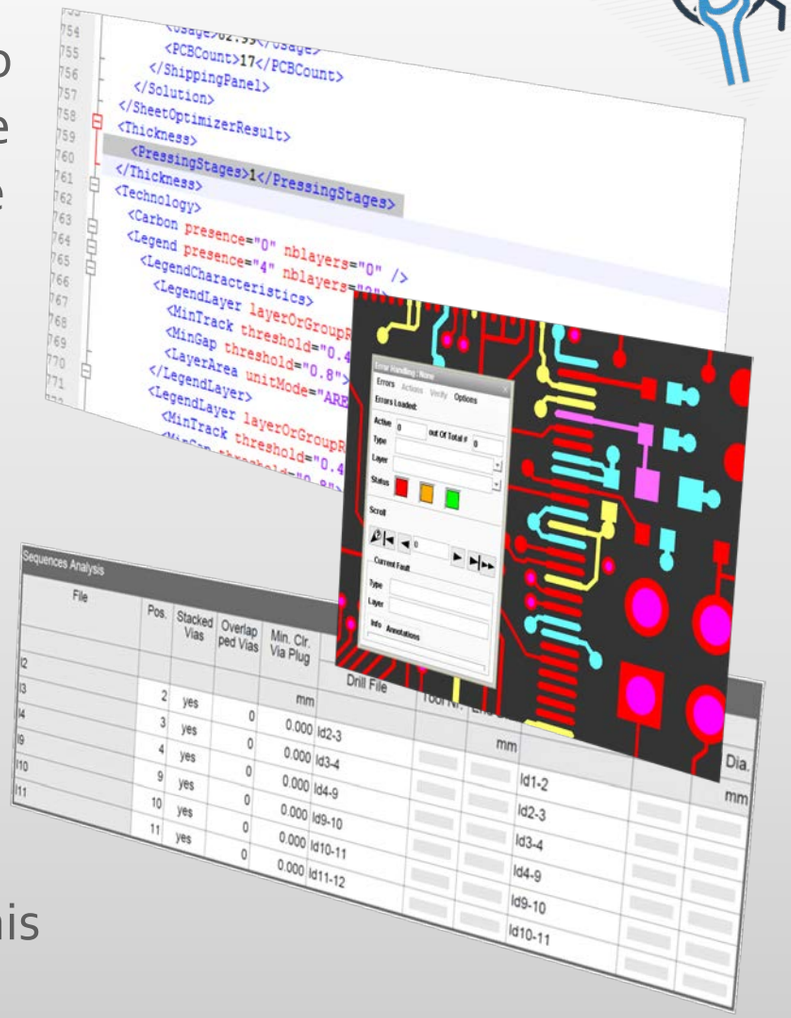
- ✓ In certain situations, the Add/Duplicate Layer function in the Layer Structure Editor could cause a crash. This has been resolved in the new version of Cockpit.
- ✓ In particular data sets, browsing through analysis results in Checkpoint could display inconsistent values and/or incorrect violation marker locations. This mismatch has been resolved.
- ✓ Checkpoint is now correctly highlighting the relevant drill layers when browsing through the analysis results.
- ✓ An incorrect layer subclass could be assigned by the layer rename script, in case of reversed inner layers that have their subclass determined by the layer's percentage copper fill. Solved.
- ✓ In a number of cases, the stack-up image in the QED PDF report was not showing the legend and mask layers anymore.



Integr8tor v2016.12

Code fixes

- ✓ Although no legend color had been selected at the time of job submit, there could still be a mention of the color White in the relevant sections of the QED XML report. This is no longer the case.
- ✓ Pressing stages are now reported in the QED XML report.
- ✓ Integr8tor's built-in netcompare function was not always performing in line with the AutoCAM set-up instruction to use/disregard copper pads under NPTH holes or data outside the outline. This has been corrected.
- ✓ The Sequence Analysis section in the QED PDF was no longer listing the relevant drill files and tools. This version corrects this issue.



Integr8tor v2016.12

Code fixes

- A further host of fixes and enhancements have been applied to

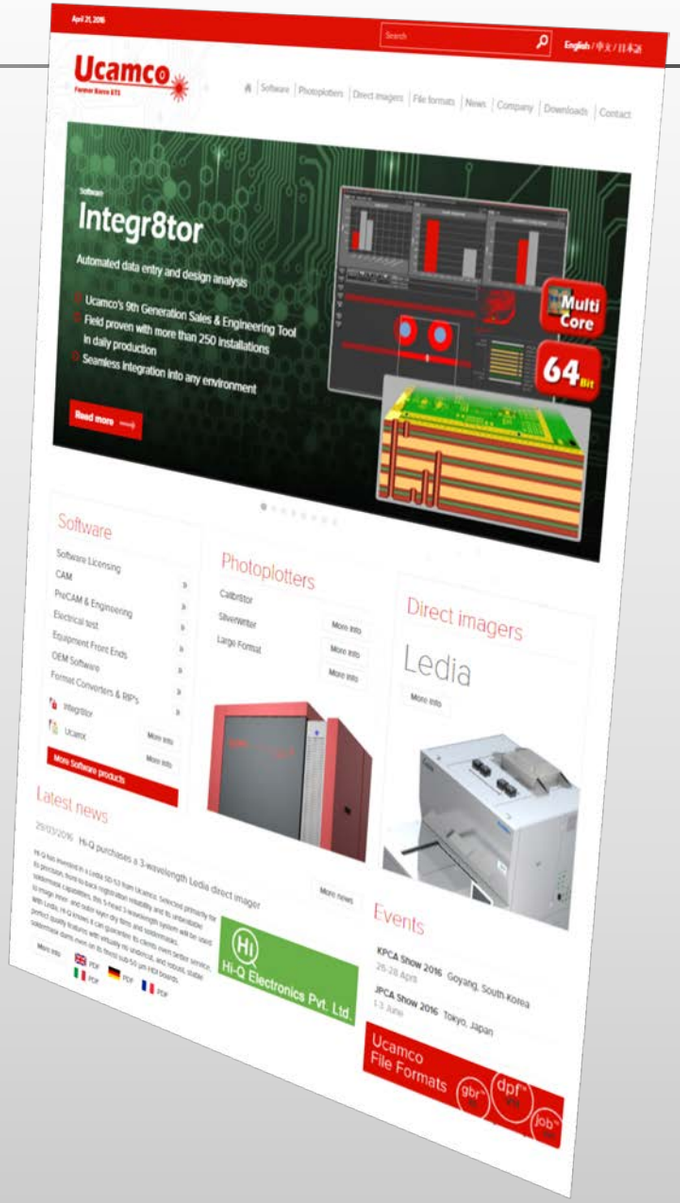
  - further optimize automatic layer stack-up recognition and layer-to-layer registration, catch invalid incoming drill span information and support import of rout data containing compensation commands
  - improve automatic recognition of legend layers
  - more accurately assess the true line width on legend layers
  - further enhance SMD and BGA pad classification in case of embedded pads
  - streamline the plated/non-plated drill qualification and eliminating buried and blind as plating types
  - opening password-encrypted archives
  - boost cockpit performance and response time in case of a long job list
  - deal with stale DPF file name references in an incoming JOB/DPF archive
  - better HPGL and Eagle input
  - avoid the generation of empty PDF images in case of very small job X/Y dimensions
  - support the translation of Integr8tor workflow remarks and ToDos in languages other than English
  - And many more …

Integr8tor v2016.12

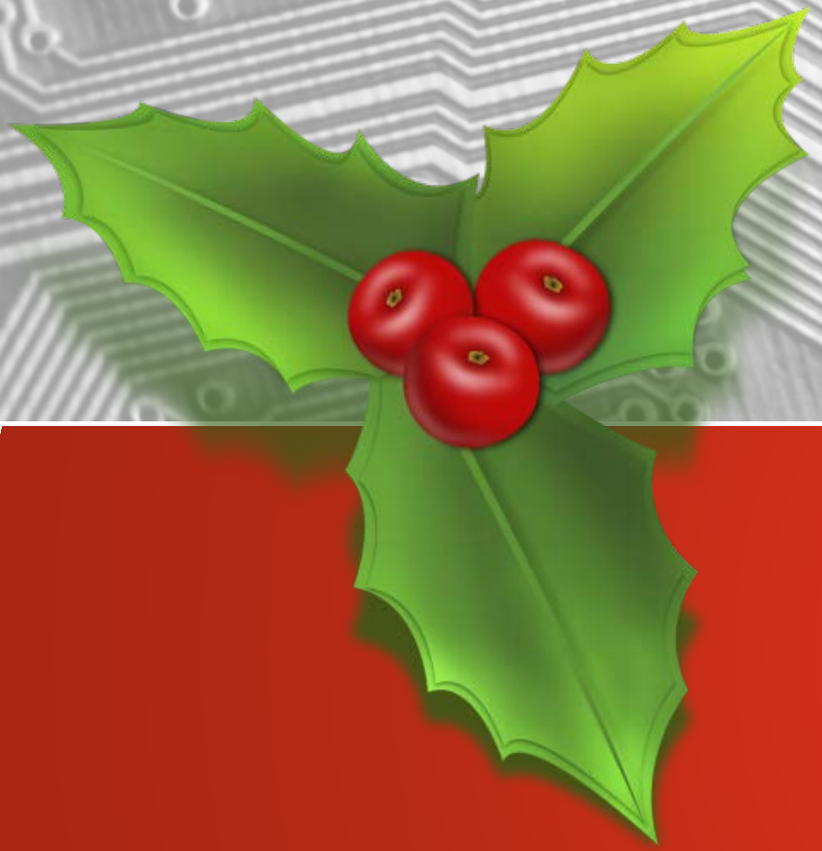
General information

- The installer can be downloaded at ftp://ftp.ucamco.com/Integr8tor
- We recommend you to install this update at your earliest convenience
- Remember to request your license upgrade to enable the drill tool compensated perspective and related tools or to continue working with ttbs. Please send your request to

  license.eur@ucamco.com
- For all questions please contact our local business partner or Ucamco helpdesk
  (see contact page on the website)



Ucamco wishes you
a merry christmas
and
a happy and prosperous
2017



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