Integr8tor v2017.05

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Integr8tor v2017.05

Introduction

Ucamco are delighted to announce the release of **Integr8tor v2017.05**, the market-leading data entry and design analysis tool for your Sales and Pre-CAM departments

This release abounds with must-have extensions and valuable enhancements and resolves a number of inconsistencies reported by our valued Integr8tor community

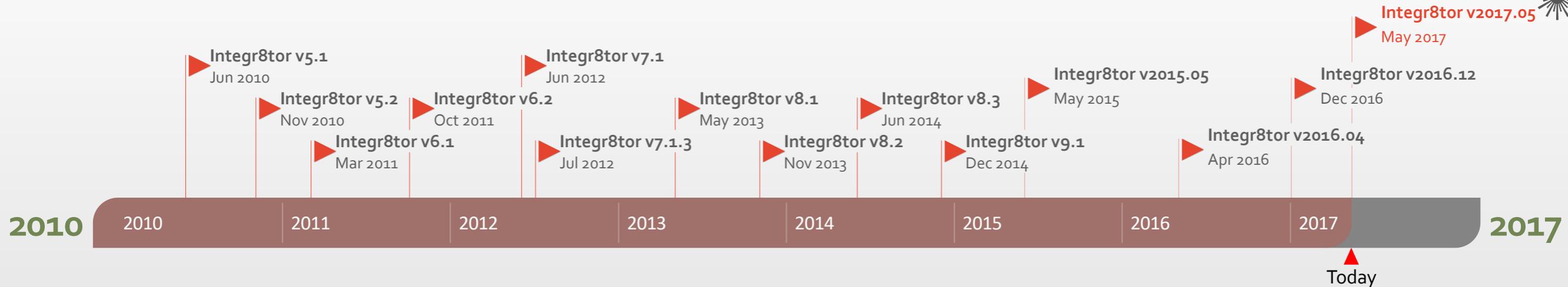These release notes take you through the version's highlights and may contain important information for setup and optimal use of our product. Please take a moment to read them through carefully

We encourage you to install this Integr8tor v2017.05 release at your earliest convenience and thank you for choosing a Ucamco product

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Integr8tor v2017.05

Serving our customer base with regular updates

Integr8tor v2017.05
May 2017

Integr8tor v5.1
Jun 2010

Integr8tor v7.1
Jun 2012

Integr8tor v2015.05
May 2015

Integr8tor v2016.12
Dec 2016

Integr8tor v5.2
Nov 2010

Integr8tor v6.2
Oct 2011

Integr8tor v8.1
May 2013

Integr8tor v8.3
Jun 2014

Integr8tor v6.1
Mar 2011

Integr8tor v7.1.3
Jul 2012

Integr8tor v8.2
Nov 2013

Integr8tor v9.1
Dec 2014

Integr8tor v2016.04
Apr 2016

| 2010 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2017 |

Today

Version	Release date	Highlights	
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.
2015.05	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
2017.05	May-17	Support for PCB Surface finish	Same-sized jobs detection

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NEW

- Support for PCB surface finishes

  ➢ Provide PCB surface finish information to your Sales department and generate more accurate price offers for your end customer

- Equisized job detection

  ➢ Catch requests for quotation for the same product but from different end customers at a very early stage…

- Uncovered vias surface calculation

  ➢ Anticipate in your quotation for the added cost of additional surface finish material resulting from opening covered via holes later in CAM

- Minimal copper width analysis

  ➢ Locate the smallest copper connection on RF and microwave products and correctly assess their manufacturability

  ➢ Get an early heads up for potential starved thermals on traditional PCBs

ENHANCED

- Multi-region outline support
  - ➢ Supply multiple outlines in an incoming assembly panel or PCBs outlines with cutouts and have WYSIWYG QED documentation and high-grade, automatically generated clean data to start from in CAM...

- Upgraded recognition and handling of slots
  - ➢ Slots in incoming customer data picked up, qualified, analysed and reported impeccably...

- Support for multiple legend layers per side
  - ➢ Have the combined image of multiple legend layers on your customer documentation...

- Conditional formatting
  - ➢ Flag the presence of special-care or cost-driving production layers graphically on the PDF report and avoid the expensive oversight at quotation stage of a non-standard production step...

ENHANCED

- Convenient all-in-one Integr8tor start-up configuration panel during software installation

  ➤ Find all program startup options on a single configuration panel with error-proof and consistent selection options

- Tightly integrated seamless access to Ustack

  ➤ Send jobs to-and-fro to Ustack in the same hassle-free, intuitive way as to Checkpoint

- Support for PDF files with embedded layout data

  ➤ Throw in a PDF document with the Gerber layout data attached to it and let Integr8tor take care of the rest

- Various performance boosts

  ➤ Optimized legend line width calculation

  ➤ Optimized workflow for Dynamic Panel Optimizer with instant results after making a non-critical setup or panel result change in the Panel Editor

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NEW

PCB Surface finish is an important cost driver:
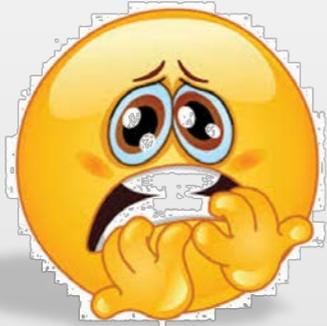
➢ Some are hugely expensive in procurement and application

➢ Prices of certain finish materials fluctuate rapidly and considerably

➢ Some finishes may not be applicable in-house and involve a sub-contracting manufacturing step. ERP and Production planning systems require this info at the earliest possible stage
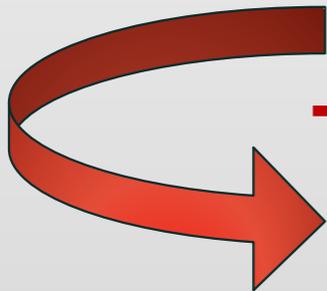
Knowledge about PCB surface finish at quotation stage is paramount...

Drill Hole Density	
Holes in SMD Pads	343 Holes/dm²
Edge Connectors	No
Surface Finish	No
	OSP / Entek

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Integr8tor v2017.05 addresses these needs:

- ➢ Select required surface finish at job submit/resubmit

- ➢ QED PDF reports lists the chosen option

- ➢ QED PDF shows free-of-mask areas on the board in a color variant corresponding to the surface finish

- ➢ QED XML carries PCB surface finish information to quotation/planning system for exact quoting and on-time scheduling

SolderMask Color:	
Legend Color:	
Surface Finish:	
	HASL / Lead Free HASL
	Immersion Tin
Customer	OSP / Entek
Customer Reference	Electroless Nickel Immersion Gold (ENIG)
	Gold – Hard Gold
Article Id	
IPC Class for AR	

Add   Cancel

Summary - General - Original

PCB Size	153.000 mm x 115.500 mm	Copper Layers	6
PCB Thickness	1.200 mm	Solder Mask	Both
Customer Panel Size		Solder Mask Color	Green
SMD Pads Top	0	Legend	None
SMD Pads Bottom	0	Legend Color	
SMD Density Top	0 SMD/dm^2	Peeloff Mask	None
SMD Density Bottom	0 SMD/dm^2	Carbon Mask	None
Number of Nets	0	Drill Hole Density	532 Holes/dm^2
Electrical Test	Single Sided	Holes in SMD Pads	No
Max. Aspect Ratio on PTH	unknown	Edge Connectors	No
		Surface Finish	Immersion Tin

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✓ More comprehensive QED quotation data package for more accurate quotes

✓ Upgrade of your customer documentation set with fancy and realistic board images

✓ ERP or Planning systems get an early heads-up if an out-of-the-ordinary PCB surface finish is required

✓ No last-minute unpleasant surprises or production stops…

✓ PCB surface finish defined where it belongs: together with the rest of the product parameters in the Integr8tor database

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NEW

➢ Several RFQ's for the **same PCB** may reach you through different subsidiaries of the same end customer or via different Electronics Manufacturing Service (EMS) providers

➢ Requests may arrive over a time span of several weeks or even months

➢ They may not all land on the desk of the same quotation engineer

➢ Coming in from different sources, the zip archives may have a somewhat different contents, still the actual PCB image data inside is the same.
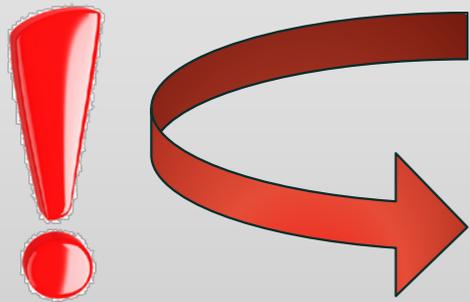
Knowing you have quoted the same product before is important to make consistent price offers and avoid potential embarrassment...

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Integr8tor v2017.05 comes with a built-in search engine to detect jobs with the same or inversed X and Y dimensions

- ➢ Accessible from Cockpit

- ➢ Highly responsive and easy-to-use:

  - Ensure that jobs have their outlines defined correctly

  - Click on an entry in the Integr8tor job queue to trigger a search for jobs with the same or inversed X and Y dimensions as the current one

  - If the Equisized filter button becomes enabled (black), jobs with the same (or inversed) X and Y dimensions have been found.

  - Press the Equisized filter button to display the list of same-sized jobs
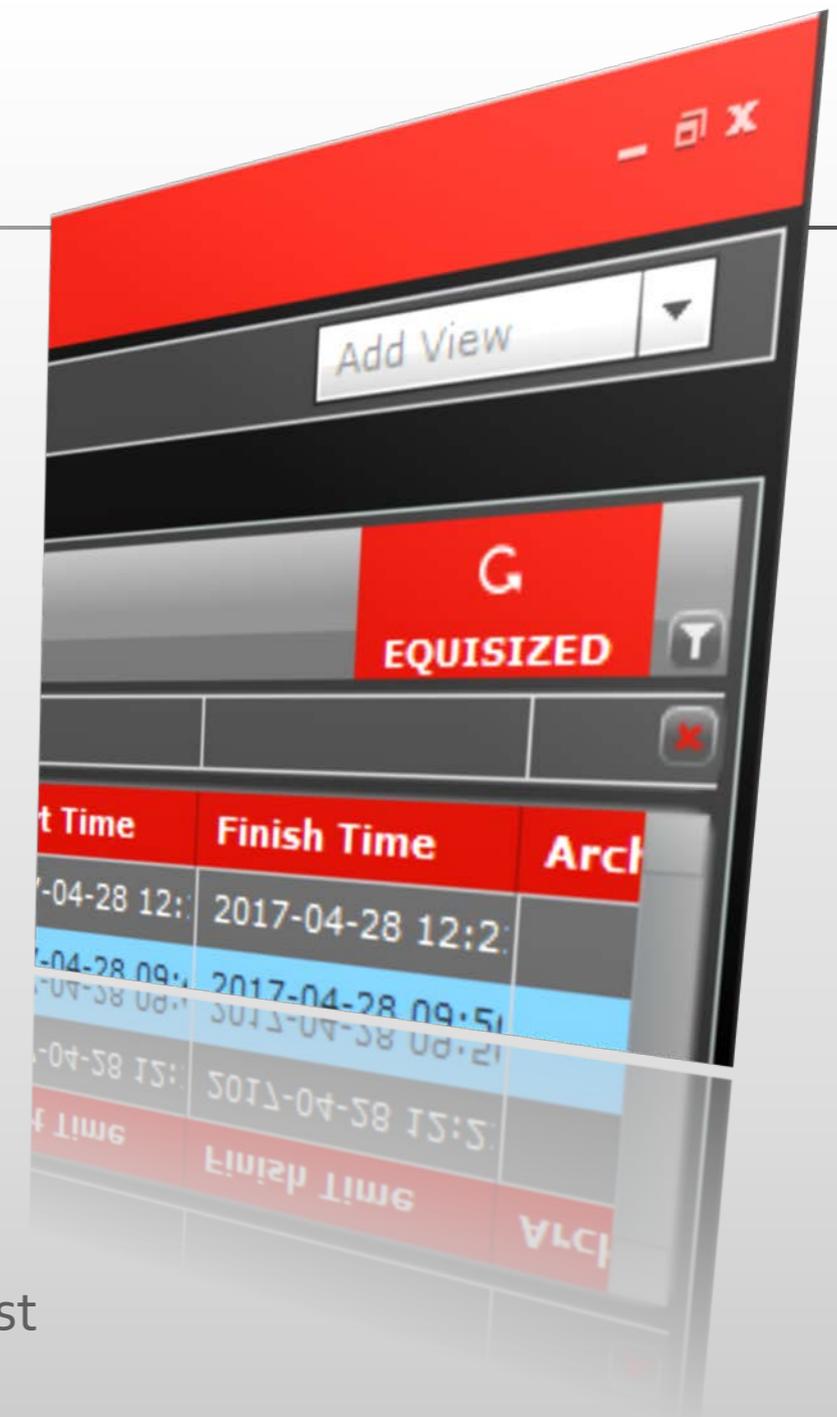
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Extensions – Equisized Job detection

- Press the Equisized button again to switch off the filtered view on the Job Queue

➢ If the Equisized button remains disabled, no jobs with the same size as the current job were found.

➢ Every job submitted from Integr8tor v2017.05 and beyond is automatically enabled for Equisized job filtering

➢ To enable legacy jobs for the function, run the single-shot courtesy upgrade script

$INSTALLDIR$\Integr8tor\webapps\ROOT\WEB-INF\bin\populateSearchParams.bat

✓ Instant and easy access to other identically-sized PCBs available in Integr8tor

✓ No time wasted going through hundreds of jobs manually to confirm earlier processing of the same PCB

✓ Different subsidiaries receive the same consistent price offers for the same product

✓ All EMS companies are quoted in the same uniform and consistent way

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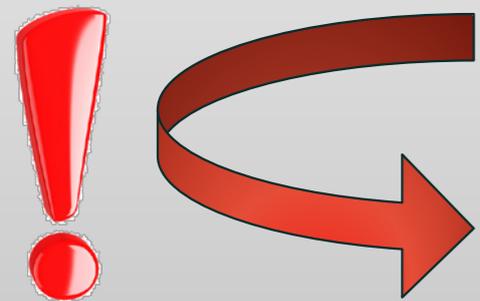» We try harder «
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NEW

➢ Many customer archives come in with via holes covered in the solder mask layers

➢ Very often, these via holes will get uncovered as part of the data preparation later in CAM

➢ This adds a certain area of exposed copper (copper free of solder mask) to the initial surface area obtained from the original Gerber data

➢ On products with a high via hole count, this extra area may be quite considerable

➢ Entailing costs for surface finish (e.g. hard gold) could soar because of this and end customer may have to be charged extra
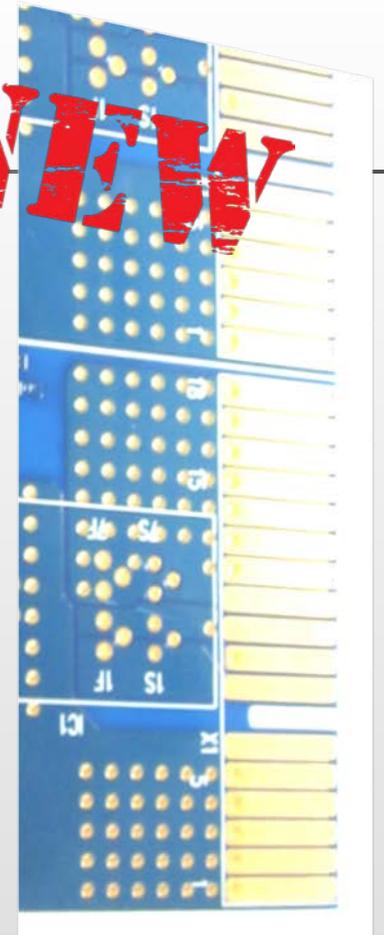
You want to anticipate this potential extra cost at the time of quotation…

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Integr8tor v2017.05 brings you automatic uncovered vias surface calculation:

- ➢ Identifies covered via pads in incoming archives

- ➢ Calculates their surface as if they would have a solder mask opening of 50 micron (radius) around the via drill hole

- ➢ Reports both

  initial copper area free of solder mask

  AND

  area with the extra mask openings

  side by side on the QED PDF and in QED XML

Copper Areas - Original

Side	Total	Free of			
		Solder Mask (as supplied)	Solder Mask (with Open Vias)	Gold Mask	Silver Mask
	dm²	dm²	dm²	dm²	dm²
Top (incl. 1/2 plated holes and routs)	0.3632	0.0807	0.0975		
Bottom (incl. 1/2 plated holes and routs)	0.4182	0.0594	0.0762		
Total (incl. plated holes and routs)	0.7814	0.1401	0.1737		

Extensions – Covered vias surface calculation

✓ Quotation data caters for the additional solder mask openings and contains the true exposed copper area values

✓ Price offer is based on the characteristics of the finished product

✓ No nasty surprises during post-calculation due to higher-than-estimated PCB surface finish costs

✓ No awkward and inconvenient price surcharge discussions with your end customer

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Extensions – Minimal copper width analysis

NEW

- ➢ Microwave or RF PCBs designs do not follow the "standard rules of lay-out"

- ➢ What seems a useless copper sliver or unterminated track and would be removed on a traditional layout could serve as an antennae or another functional item, vital to the board's correct operation

- ➢ Seemingly useless "copper blobs" on inner layers without drilled connections to the outside could appear as netlist-wise and electrically irrelevant, yet may fulfill a crucial function on the board

- ➢ On regular PCBs, (too) small copper widths in a power or ground plane can herald the presence of starved thermal issues…
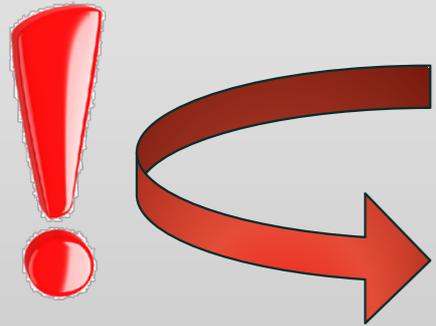
Minimal **copper** width is a valuable add-on piece of information in addition to the regular minimal **line** width…

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Integr8tor v2017.05 adds this important nuance between copper width and line width to its analysis and reporting:

- ➤ Like before, electrically significant copper widths are reported as a Min. Line Width

- ➤ Electrically non-significant copper widths now have a private section in QED PDF and QED XML under Min. Copper Width

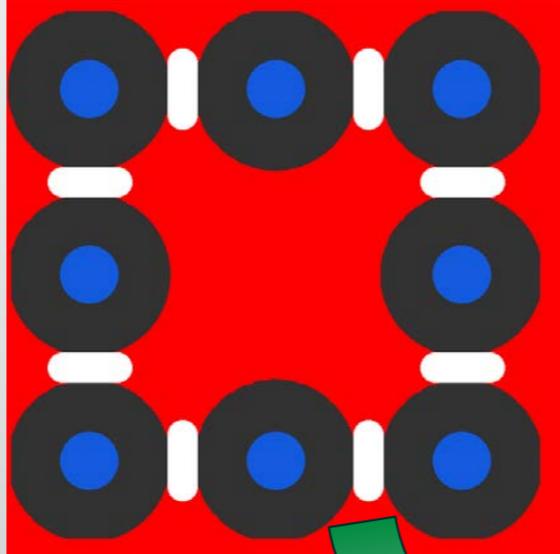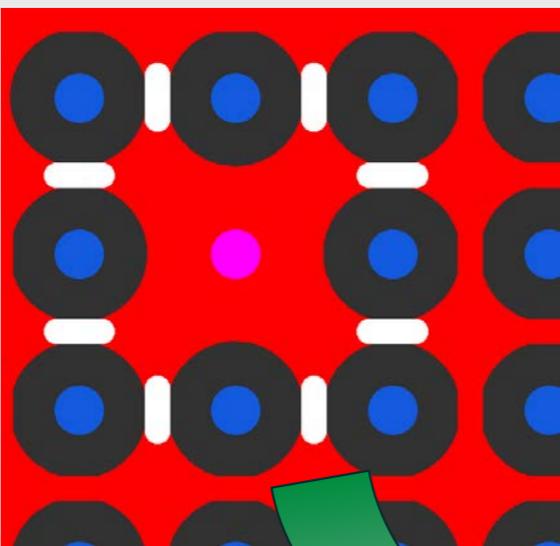- ➤ Both Min. Line Width and Min. Copper Width locations are available in the QED PDF images section

Copper Layers - Original			
File	Pos.	Min. Line Width	Min. Copper Width
		mm	mm
zzyxxx01	1	0.048	0.048
zzyxxx02	2	0.100	0.050
zzyxxx03	3	0.100	0.052
zzyxxx04	4	0.099	0.083
zzyxxx05	5	0.098	0.052
zzyxxx32	6	0.064	0.050

Extensions – Minimal copper width analysis

➤ Example:
   left = electrically significant because of center drill hole
   → white blocks reported as Min. Line Width
   right = electrically non-significant
   → white blocks reported as Min. Copper Width

Copper Layers - Original

File	Pos.	Min. Line Width	Min. Copper Width
		mm	mm
zzyxxx01	1	0.048	0.048
zzyxxx02	2	0.100	0.050
zzyxxx03	3	0.100	0.052
zzyxxx04	4	0.099	0.083
zzyxxx05	5	0.098	0.052
zzyxxx32	6	0.064	0.050

Extensions – Minimal copper width analysis

✓ Reliable and accurate design analysis results for Microwave and RF products

✓ Accurate product information allows correct price offers for this type of products

✓ Upgraded documentation tool for easier communication with your end customer

✓ Distinction Min. Line Width <> Min. Copper Width also valuable for regular PCBs, for instance in the context of starved thermal issues on plane layers

Min. Copper Width
Inner Layers
0.050 mm

1 mm
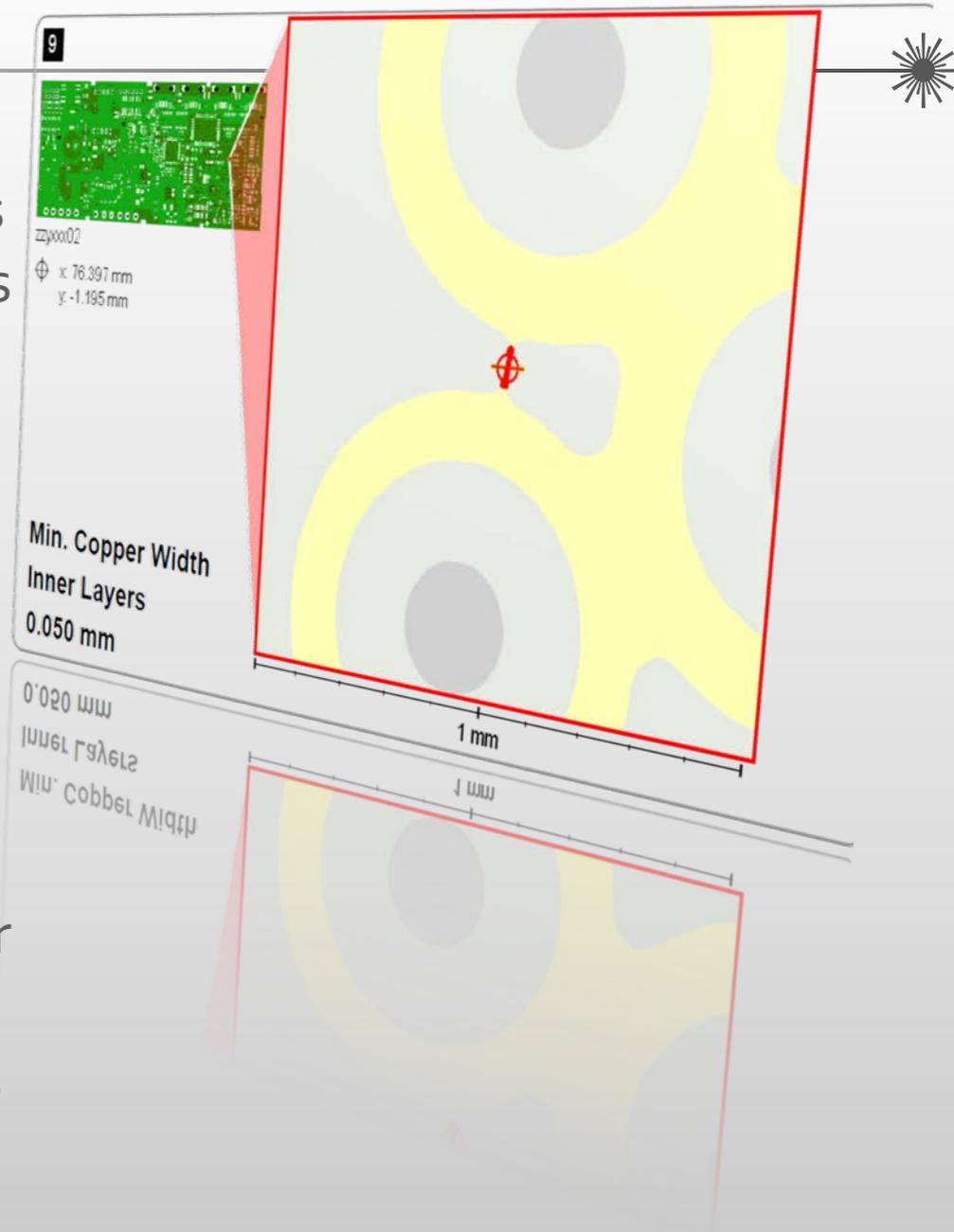
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✓ Multiple regions inside an outline or outlines with cutouts are now fully supported throughout the entire Integr8tor process

✓ Use UcamX or a third-party CAM software to introduce/update complex outlines in the Integr8tor job

✓ Truthful on-screen representation of PCBs with cutouts

✓ WYSIWYG QED documentation

✓ High-grade, automatically cleaned data to start with in CAM in combination with AutoCAM (licensed feature)
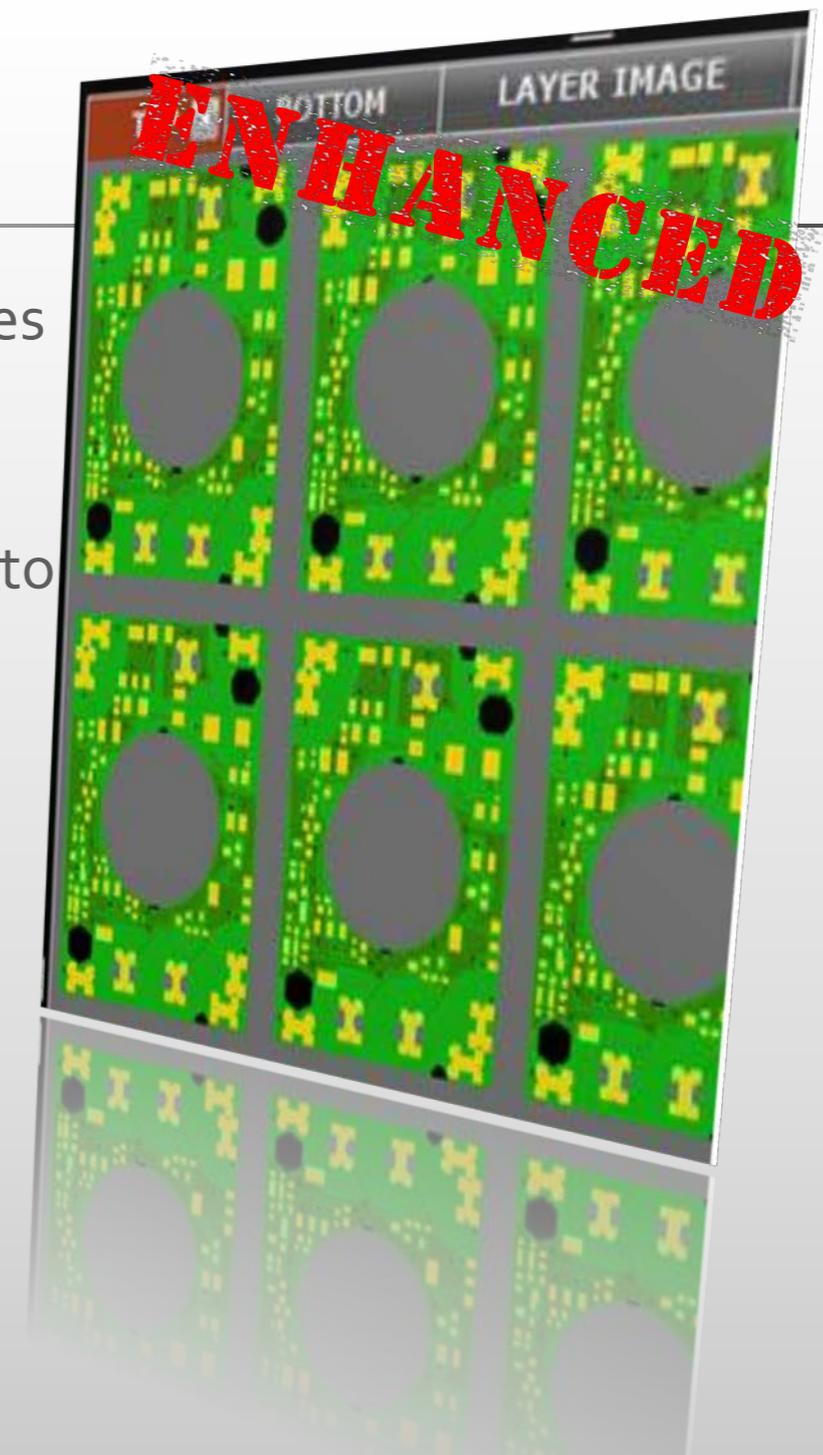
ENHANCED

LAYER IMAGE

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✓ Slots in incoming customer data picked up, qualified, analysed and reported impeccably…

✓ Same-quality plated / non-plated recognition as for drill tools

✓ Accurate QED data with the required routing distance

✓ Planning and ERP better predict processing times in drill/rout department

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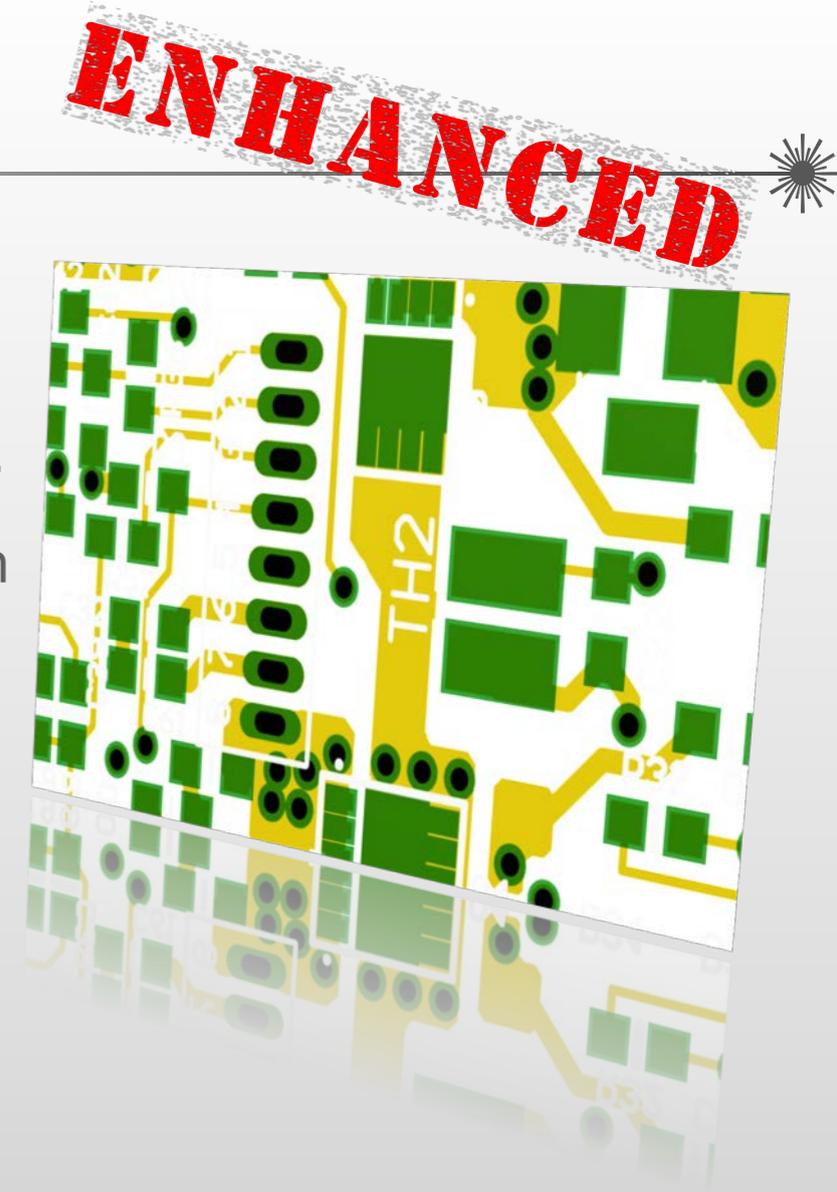
Integr8tor v2017.05

ENHANCED

✓ Certain CAD systems (for instance Eagle) supply legend data split over multiple layers

✓ After input of an Eagle .brd file multiple legend layers may exist for top and bottom

✓ Integr8tor v2017.05 consistently displays all legend data in the board images in Cockpit and QED PDF in the color chosen at job submit

✓ Better-quality communication with your end customer without needless questions about "missing" pieces of legend
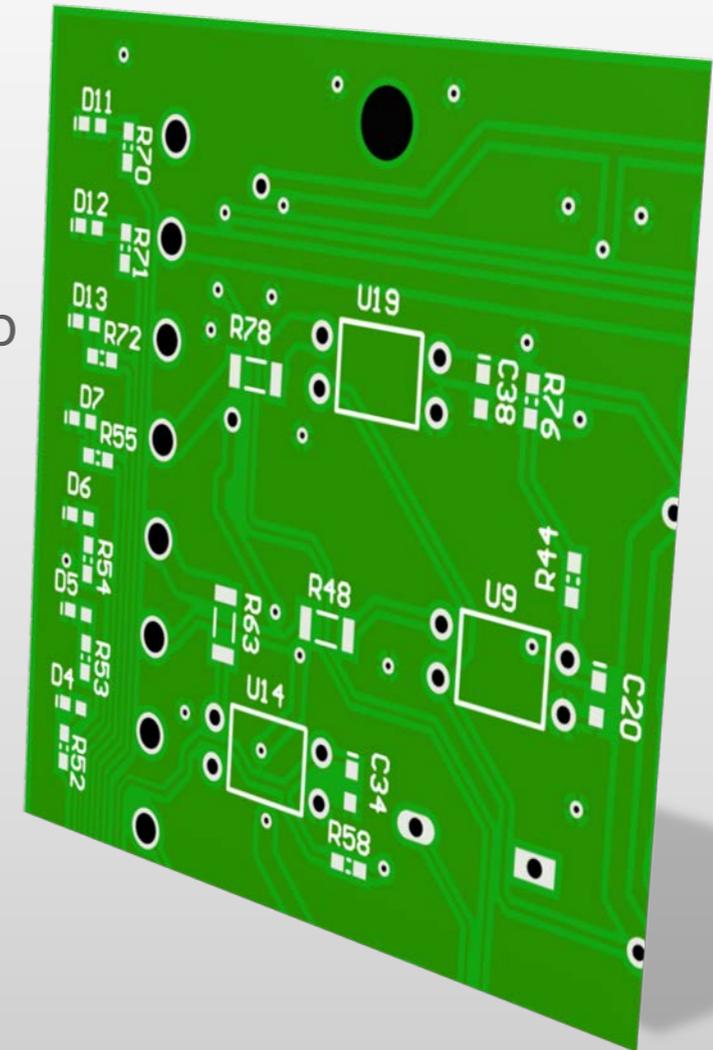
ENHANCED

✓ Conditional formatting has been extended to support highlighting of the layer Function cells

✓ Visible in the QED PDF "Files" section

✓ Eye-catcher to flag the presence of special-care, exotic or cost-driving layer types in the job

✓ Eliminates costly oversights during the preparation of the price offer

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✓ Integr8tor has 3 different ways to start up

✓ Depending on the chosen methods additional settings may be required

✓ The Integr8tor v2017.05 installer regroups this functionality in a clear, concise and intuitive panel with mutually exclusive options

✓ In case Integr8tor is already installed Using Windows Services, this enhanced installation section will detect the existing service and its credentials and leave it untouched
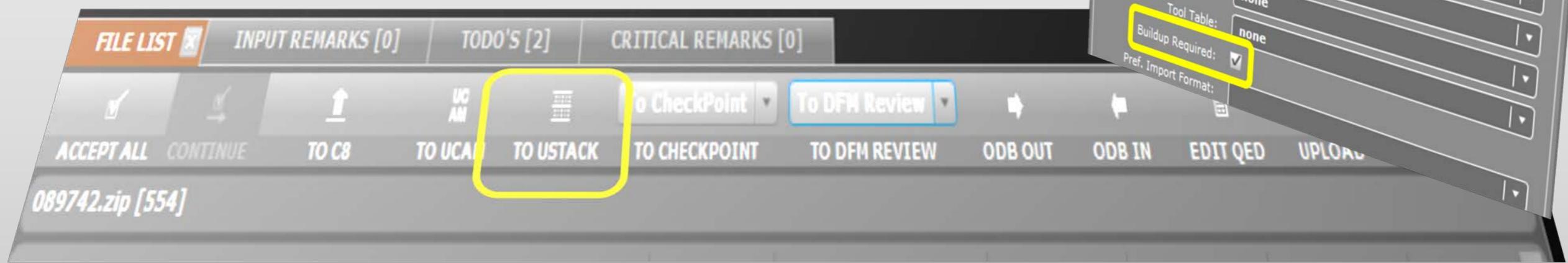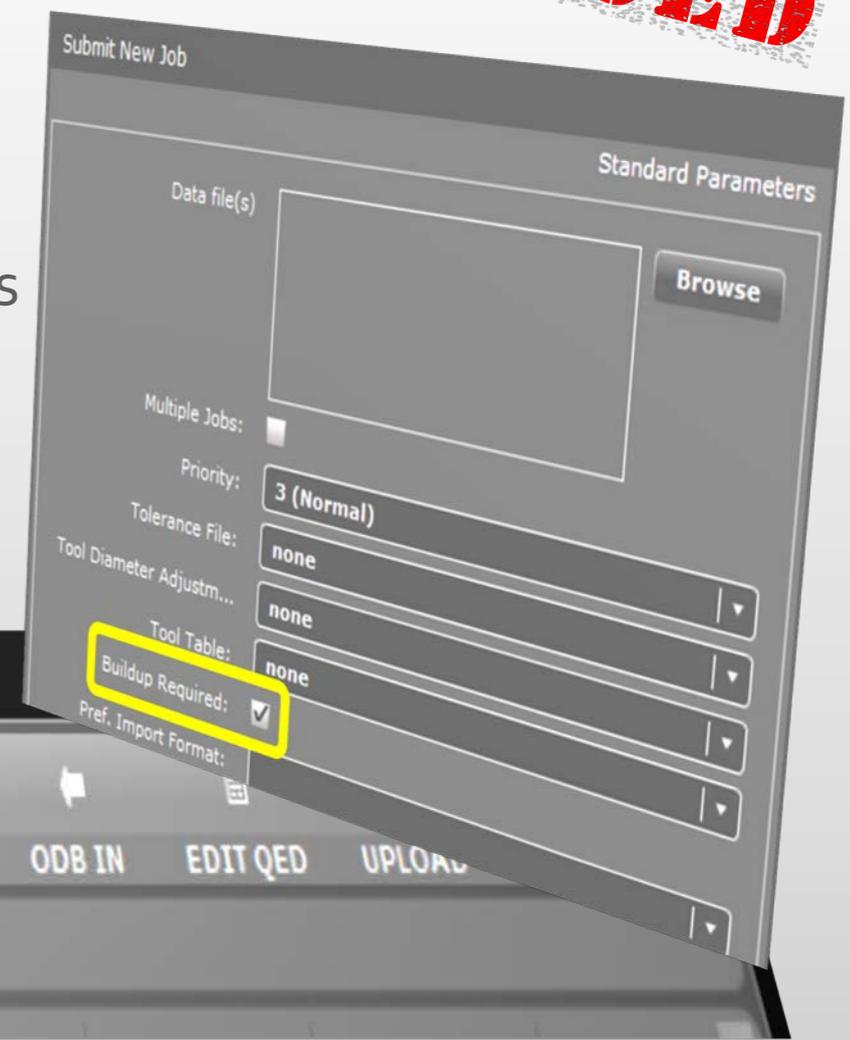
✓ Hassle-free and uncomplicated installation / upgrade

ENHANCED

Integr8tor v2017

Configure Startup

- System Check
- License Agreement
- Choose Install Set
- Pre-Installation Summary
- Installing...
- Configuring Application
- Install Complete

◉ Create Start and Stop desktop shortcuts only

○ Start at Windows Logon
☑ Create Start and Stop desktop shortcuts additionally?

○ Using Windows Services
Services will be configured with LocalSystem account
☐ Create Integr8tor Console desktop shortcut

InstallAnywhere

Cancel   Previous   Install

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ENHANCED

- Tightly integrated seamless access to Ustack*

✓ Tick the Buildup Required option at job submit time

✓ Job will stop before analysis with a status Edit in Ustack

✓ Find the TO USTACK function in its new location on the Cockpit function bar

Submit New Job

Standard Parameters

Data file(s)

Browse

Multiple Jobs:

Priority: 3 (Normal)

Tolerance File: none

Tool Diameter Adjustm... none

Tool Table: none

Buildup Required: ☑

Pref. Import Format:

FILE LIST ⧗ | **INPUT REMARKS [0]** | **TODO'S [2]** | **CRITICAL REMARKS [0]**

o CheckPoint | To DFM Review

ACCEPT ALL | CONTINUE | TO C8 | TO UCA | TO USTACK | TO CHECKPOINT | TO DFM REVIEW | ODB OUT | ODB IN | EDIT QED | UPLOAD

089742.zip [554]

* Ustack is a licensed Integr8tor option

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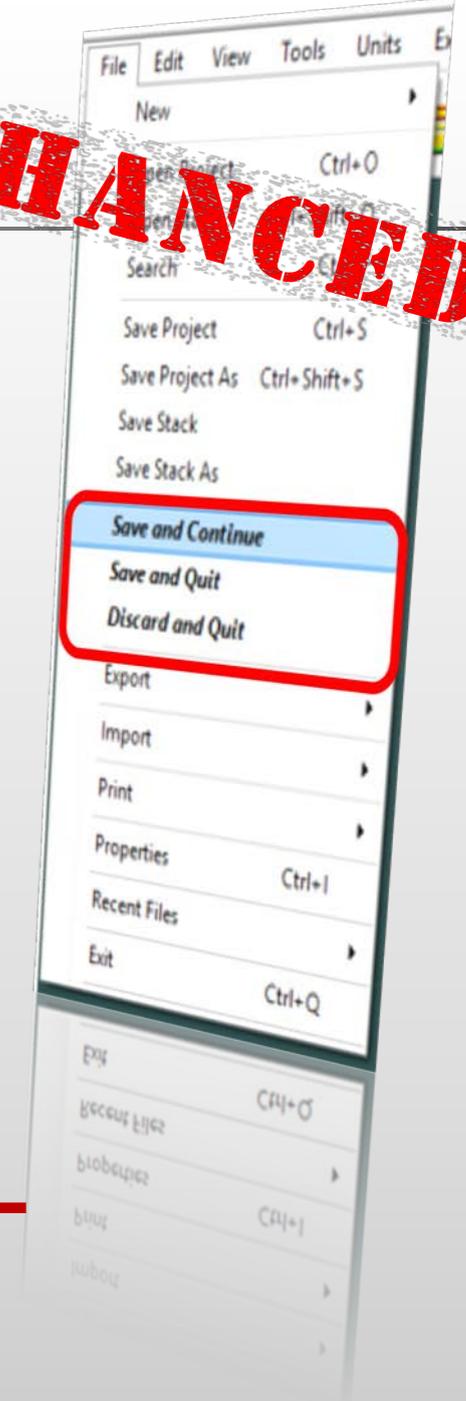
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- Tightly integrated seamless access to Ustack

✓ Return from Ustack using its new Integr8tor function buttons available from Ustack v17.05 onwards:

- **Save and continue**
  Do an intermediate save of the buildup information and continue working on the stackup in Ustack

- **Save and Quit**
  Save the buildup information, leave the Ustack application and start a design analysis / update in Integr8tor

- **Discard and Quit**
  Exit the Ustack application without taking any buildup information back to Integr8tor

✓ Repeat this simple exchange as often as required

✓ Vastly improved user experience
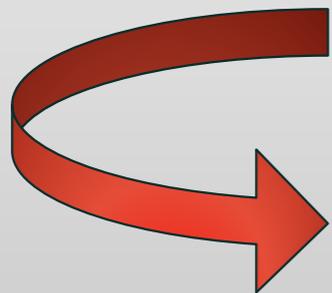
Integr8tor v2017.05

- Support for PDF files with embedded layout data

✓ PDF files can contain attachments

✓ Some systems use this feature to attach the Gerber layout files to the PDF document with the product parameters or logistic information

✓ Integr8tor v2017.05 is handling this type of input automatically

✓ It strips the layout data off the PDF document and continues with the input and analysis

✓ No unexpected halt in the Integr8tor job Queue

✓ No need to first manually process the incoming customer data in Adobe Acrobat to separate the Gebers from the PDF

✓ Automated procedure, faster result

✓ Simplified operation - Enjoyable user experience

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✓ Performance of minimal line width calculation on legend layers with heavily painted texts has been noticeably improved

✓ The Dynamic Panel Optimizer * has been tuned for better performance: selecting one from the lists of assembly and production panels produces instantaneous updates the relevant QED documentation

✓ Same reliable results

✓ Shorter processing times

✓ Higher throughput
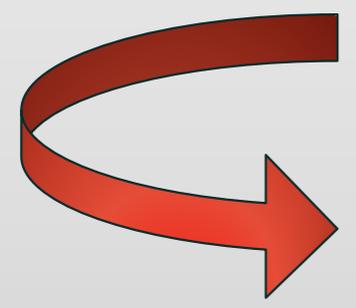
* Dynamic Panel Optimizer is a licensed Integr8tor option

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Integr8tor v2017.05 further features the following fixes and improvements…

- ❖ Very small copper rings were mistakenly ignored when establishing whether or not a tool is plated. This has been rectified
- ❖ After a cockpit edit, jobs that have come in from ODB++ are no longer submitted to a layer registration step
- ❖ A performance issue in the generation of (rotated) true-image panel previews in Dynamic Panel Optimizer has been addressed
- ❖ In particular cases, the PDF image of the bottom layer of the job was not displaying all contour regions
- ❖ The size of the job Submit/Resubmit/Modify dialogues was sub-optimal and caused some information on the right-hand side to be sliced off. This is no longer an issue.
- ❖ The selection algorithm for painted data has been thoroughly revised and brought to a new level op performance
- ❖ An inconsistency in the 'inset' / 'not inset' functionality of conditional formatting has been resolved
- ❖ Edge connector recognition has been overhauled and is now picking up a series of additional cases it was ignoring before

Code fixes - Continued

- ❖ Analysis performance on layers with very small hatching has been improved
- ❖ After an edit in Drill Editor, tools were unintentionally re-analysed to establish their plating This software update corrects this issue
- ❖ In some cases the layer functions were changed unwantedly after a job was edited layer structure or drill editor. This item has been resolved
- ❖ The numbered anchors on certain values in the QED PDF report are now jumping again to the detailed images section ▮1▮   0.106▮
- ❖ The accuracy and performance of the same net spacing algorithm has been brought to a higher level
- ❖ A change in the order of the drill layers in combination with automatic layer renaming was potentially causing a layer mis-naming issue. This is no longer the case
- ❖ The Clean job is now correctly submitted to the layer renaming routine
- ❖ The PDF-conversion of bmp, gif and png image docs had ceased and has now been reinstated
- ❖ The rebuilt and clean jobs now correctly contain the drill tool manager aperture attributes
- ❖ An extension to AutoInput has been made to ensure correct support for incoming Posalux drill files

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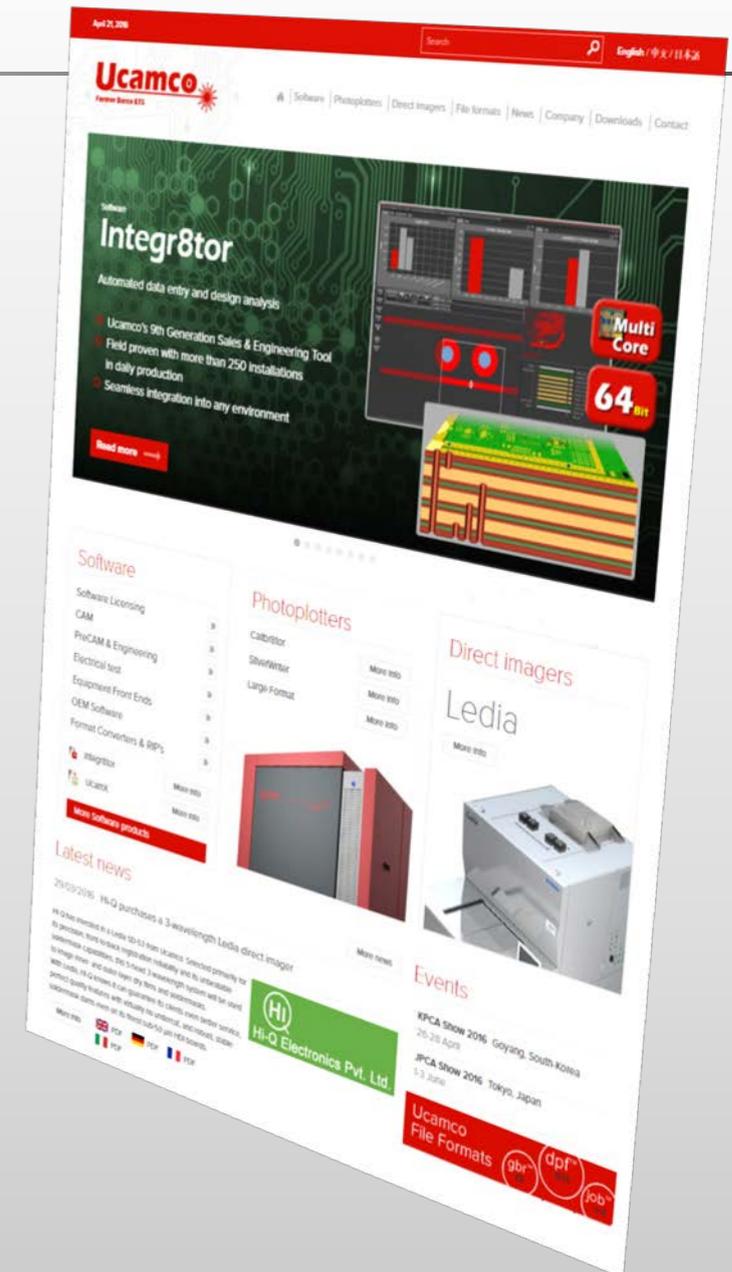» We try harder «
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❖ The first use of Checkpoint will automatically trigger the local installation of the software on the client

❖ If available in the Gerber files, G04 comments about the layer order and layer polarity are taken into account to come to the correct decision

❖ A Java ClassCastException during line width calculation has been corrected

❖ Automatic stackup recognition has been extended to make use of the .EXTREP and .DRR files if they are available in the incoming archive. This results in a higher number of correct, automatically generated stackups after job input

❖ It is now possible to unassign a previously chosen color for mask, legend or PCB surface finish. In earlier software revisions, the color selection boxes did not allow to return to the state "no color assigned"

❖ A problem where the same .fdf file was endlessly being resubmitted via the hotfolder input mechanism has now been corrected

❖ And many more…

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- The installer can be downloaded from ftp://ftp.ucamco.com/Integr8tor

- We recommend you to install this update at your earliest convenience

- For any further questions you may have, please contact our local business partner or the Ucamco helpdesk

- We thank you for choosing a Ucamco product