

Integr8tor v8.1

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Integr8tor

Version 8.1

The screenshot displays the Integr8tor Cockpit software interface. The top bar shows the user is logged in as 'ron' on host 'bepc120-0050'. The main interface is divided into several panels:

- JOB QUEUE [13]:** A table listing jobs with columns for LOCK, ID, HANDLER, ORIGINAL DATA, LOCATION, PROGRESS, FULL DURATION, PRIO, ARTICLE ID, and INPUT COMMENT. The table contains 13 rows of job data.
- QED Report:** A report for job 45800744320000-00.zip, showing details like Name, Project Completed on, Board ID, Quote ID, Year, and User. It also includes a PCB view with Top and Bottom views.
- CAM Report:** A report for job 45800744320000-00.zip, showing details like Name, Project Completed on, Board ID, Quote ID, Year, and User.
- FILE LIST:** A table listing files with columns for INITIAL, RENAMED, FORMAT, FUNCTION, POSITION, and POLARITY. It contains 13 rows of file data.
- LAYER IMAGE:** A visual representation of the PCB layer image for job 74432001_g01.
- TODOS [0], INPUT REMARKS [3], CRITICAL REMARKS [0]:** A section at the bottom left showing a list of tasks and remarks.

64Bit

Multi
Core

Introduction



We are pleased to announce the release of version 8.1 of Integr8tor.

Integr8tor v8.1 has again significant improvements and new functionality, explained in these release notes. Equally important, the quality has been raised and a number of bugs were fixed.

We recommend you to install version 8.1 as soon as possible.

Overview of new Functionality



Installation

- Streamlined I8 installer with flexible backup options
- FlexNet module is moved to a separate installer
- Support for Windows 8 and Windows Server 2012

Server

- Integr8tor can now be started as a service
- Definable server port in HotFolder preferences

Input

- EIA drill format support
- Improved netlist Input
- Gerber Input warnings more intuitive
- More stackups are found automatically due to extra rules and an improved stackup algorithm
- Improved layer registration
- More tool and aperture files are handled
- Default parameters can be defined in defaults.xjd
- Import and retain more data from ODB++

Overview of new Functionality



Cockpit

- Submit and resubmit job allow selecting the preferred formats (for multi-format jobs)
- Shows all files in Layer Structure Editor
- Redesign of the Sizes Editor
- Shows original file name in Drill Tool Editor
- Allows for editing of the drill tool sizes
- Checks for open jobs when exiting

Workflow

- Uses the preferred format in multi-format jobs
- Secondary Gerber format files are converted for visualization in multi-format jobs; only the preferred format is used for processing
- Preference key allows to stop after AutoInput

Overview of new Functionality



QED

- A dimensioned drawing for all production (working) panels is added to the QED report
- Overlapping vias in sequential boards are reported
- The number of drill holes per sheet in the optional SheetOptimizer is reported
- Warning on plated drills lacking rings at end of span
- Warning on NPTH hitting functional copper

Output

- ODB++ output structured for more convenient processing in Genesis; bypass limitations of Genesis

Release history

Commitment on regular updates

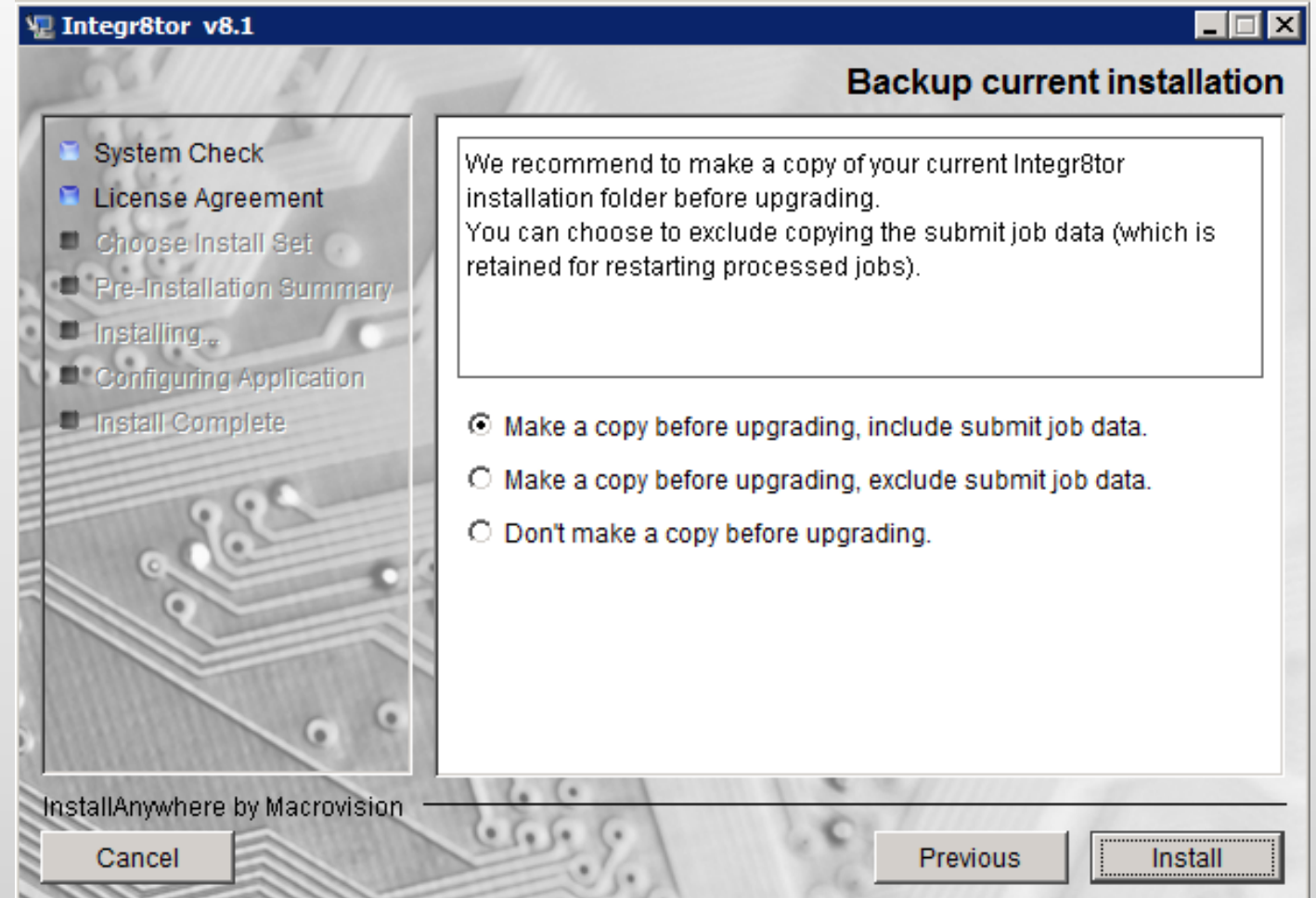


| Version | Release date | Highlights |
|---------------------------|-----------------|---|
| 5.1 | July 2010 | <ul style="list-style-type: none">• Multiple job submit via email.• CAM input report. |
| 5.2 | November 2010 | <ul style="list-style-type: none">• Copper clearances by type.• Scoring calculation. |
| 6.1 | March 2011 | <ul style="list-style-type: none">• Perspectives in Cockpit.• Improved performance. |
| 6.2 | November 2011 | <ul style="list-style-type: none">• Multiple QED reports.• Exposed copper calculation. |
| 7.1 | June 2012 | <ul style="list-style-type: none">• Localized interface.• Line width on planes. |
| 7.1.3 maintenance release | July 2012 | <ul style="list-style-type: none">• Bug fix release for recovered job. |
| 8.1 | May 2013 | See current presentation. |

Installation

More productive , less downtime

- You now have the option to exclude the submit job data^(*) when backing up the current version before upgrading
- *This will dramatically speed up the installation, particularly when you have large amounts of processed data*



(*) The submit job data is stored in the C:\Ucamo\integr8tor directory structure, which is copied during the backup

Installation

More productive , less downtime



- Ucamco application software will now be updated using dedicated product installers. These installers no longer contain the license server setup and maintenance. This function is taken over by the dedicated Ucamco's license installation and upgrade package.
- *Our new-style product installers are smaller in size, faster to download and quicker and easier to install. This supports our aim to bring out regular maintenance releases that are easy to implement.*

Server

Easier to manage



Run Integr8tor as a service

- Modern approach to running “client-server” applications
 - *Eliminates the need to have a user “logged” on to the system*
 - *Integr8tor can now automatically start working after restarting the computer*

Input

Several enhancements



- EIA formatted drill files are converted to ASCII for further processing
 - *No longer necessary to have customers do "extra" outputs*
- Clearer messages on the incoming Gerber data
 - *Less chance for confusion on what is actually wrong with input files*
- More stackups are found automatically due to extra rules and an improved stackup recognition algorithm
 - *Less time spend in the Job Editor as more jobs "go green"*
- Better layer registration
 - *Less chance that a layer is not registered to the rest of the job*
- More tool and aperture files are handled
 - *Less chance that a data set cannot be processed automatically*

Input

Several enhancements



- Set defaults like colors and board thickness in the defaults.xjd
 - *Easier customization*
- Drill information and attributes in ODB++ are now read and retained
 - *Allows for more complete output*
- Netlist input has been improved in both IPC as well as ODB++ data sets
 - *Less "false" netlist compare issues*
- Original net names displayed in error messages rather numbers only
 - *Easier to discuss netlist issues with customer*

Cockpit

Submit jobs

Select the preferred format at submit time

- When an archive contains multiple formats:
 - Gerber
 - ODB++
 - Bosch
 - Ucam Job (Ujob)
 - Ucam DPF
- You can now choose which one to use
- *No more separating data manually outside of Integr8tor*

The screenshot displays the Ucamco Integr8tor Cockpit interface. The main window shows a 'JOB QUEUE [30]' with columns for LOCK, ID, QU, PRI, HAND, ORIGINAL DATA, LOCATION, and PROGRESS. A 'Submit new job' dialog box is open, showing options for Data file(s), Priority (3 (Normal)), Tooltable (none), Polar Job, and Pref. Import Format (Odb++). The dialog also includes fields for Customer Name and Customer Partnumber, and buttons for Add and Cancel.

| LOCK | ID | QU | PRI | HAND | ORIGINAL DATA | LOCATION | PROGRESS |
|------|----|----|-----|------|---|-------------|-----------------|
| 31 | 3 | | | | incorrect_clearance.zip | QED OK | Review |
| 30 | 3 | | | | XPadna7501-PCB-Quote.zip | Edit in CAM | 42% |
| 29 | 3 | | | | PLM-0086-01-05.zip | QED OK | Update Finished |
| 28 | 3 | | | | 2570C0042_REV-C_CAMFILES.ZIP | Edit in CAM | |
| 27 | 3 | | | | 2340CE104_REV-C_CAMFILES.zip | Check Tool | |
| 26 | 3 | | | | 30042887-PCB-A-Quote.zip | QED OK | |
| 25 | 3 | | | | 35392.tgz | Check Tool | |
| 24 | 3 | | | | odjob.tar | Check Tool | |
| 23 | 3 | | | | NDS2241_CB_F100_DFM_check_2013_0213_omn_1.zip | Edit in CAM | |
| 22 | 3 | | | | 311742_002_dfm_spr29_1228.tgz | QED OK | |
| 21 | 3 | | | | 65174_d2_src_proprietary.tgz | Check Tool | |
| 20 | 3 | | | | A0198F_kVMDL_SPC_2_0ENG_Gerbers.zip | Check Tool | |
| 19 | 3 | | | | 22027336_000_FAB.zip | QED OK | |
| 18 | 3 | | | | H6530qe-200_REV003_odb.tgz | QED OK | |

| INITIAL | RENAMED | FORMAT | FUNCTION | FUNCTION | FUNCTION |
|---|-----------|-----------|-----------|----------|----------|
| NDS2241_CB_F100_L21.gds | 21 | ger274x | inter | 21 | positive |
| NDS2241_CB_F100_L22_Bottom.gds | 22 | ger274x | inter | 22 | positive |
| NDS2241_CB_F100_SoldermaskBottom.gds | 22m | ger274x | mask | bottom | positive |
| NDS2241_CB_F100_SilkscreenBottom.gds | 22s | ger274x | silks | bottom | positive |
| NDS2241_CB_F100_SolderPasteBottom.gds | 22sp | ger274x | paste | bottom | positive |
| NDS2241_CB_F100_1-14Plated.nod | drl_1-14 | excellon2 | plated | 1-14 | positive |
| NDS2241_CB_F100_18-22Plated.nod | drl_18-22 | excellon2 | plated | 18-22 | positive |
| NDS2241_CB_F100_ContourNonPlated.nod | rot_1-22 | excellon2 | rot | 1-22 | positive |
| NDS2241_CB_F100_ThruholeNonPlated.nod | npt_1-22 | excellon2 | nonplated | 1-22 | positive |
| NDS2241_CB_F100_ThruholePlated.nod | drl_1-22 | excellon2 | plated | 1-22 | positive |
| NDS2241_CB_F100_DrillDrawingThrough.gds | drlmap | ger274x | drlmap | none | positive |
| NDS2241_CB_F100_PCB_Netlist_ipc356.net | ngpl | document | document | none | positive |
| NDS2241_CB_F100_Stackup.pdf | xitem | document | document | none | positive |
| NDS2241_CB_F100_fabspec.doc | xitem | document | document | none | positive |

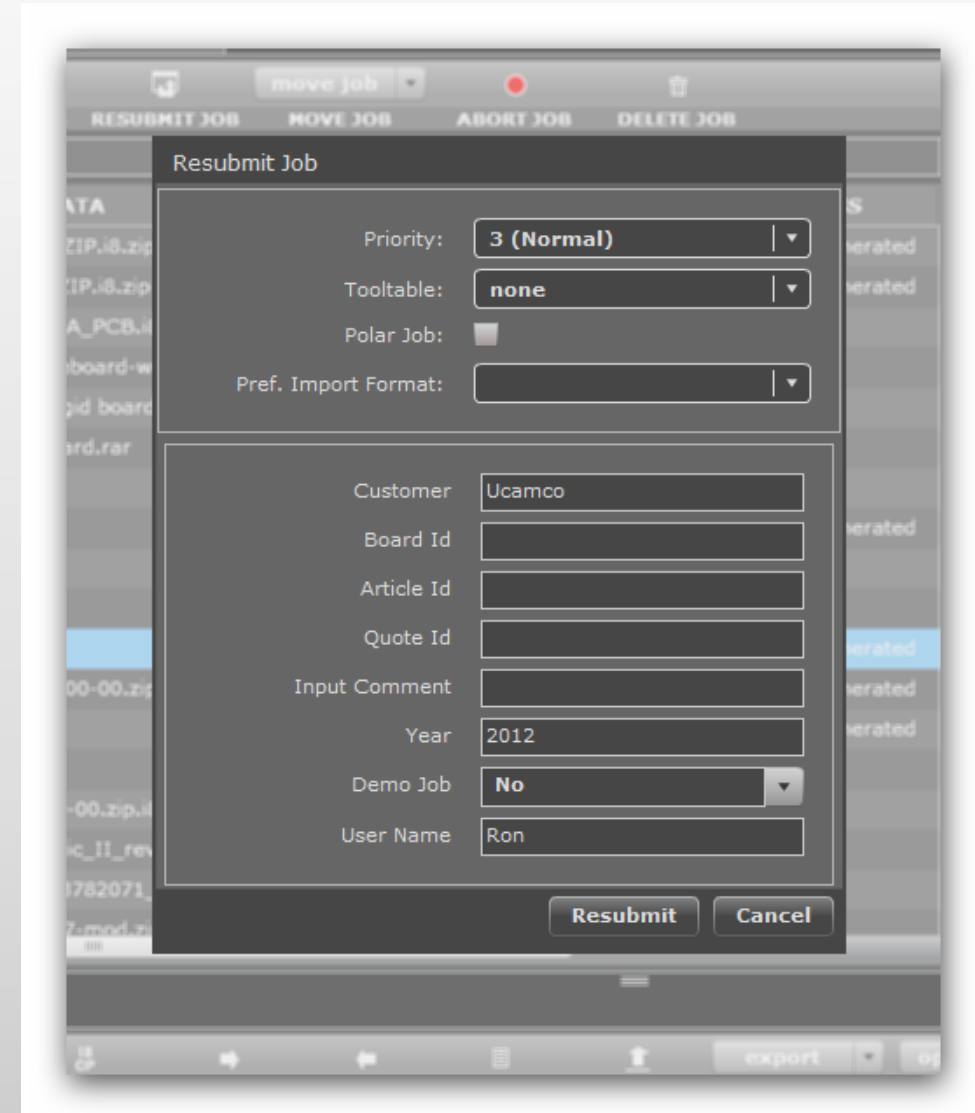
Cockpit

Resubmit a job

- It is now possible to resubmit a job with a different preferred format or other input parameters

Note: This is not the same as moving the job to AutoInput. Doing so will simply process the job again with the same parameters.

- Avoids having to delete the job and submitting it with the correct parameters (e.g. after choosing an incorrect tool table)
- Allows to override the previously chosen Preferred Input Format (*)



(*) See further in the section on WorkFlow

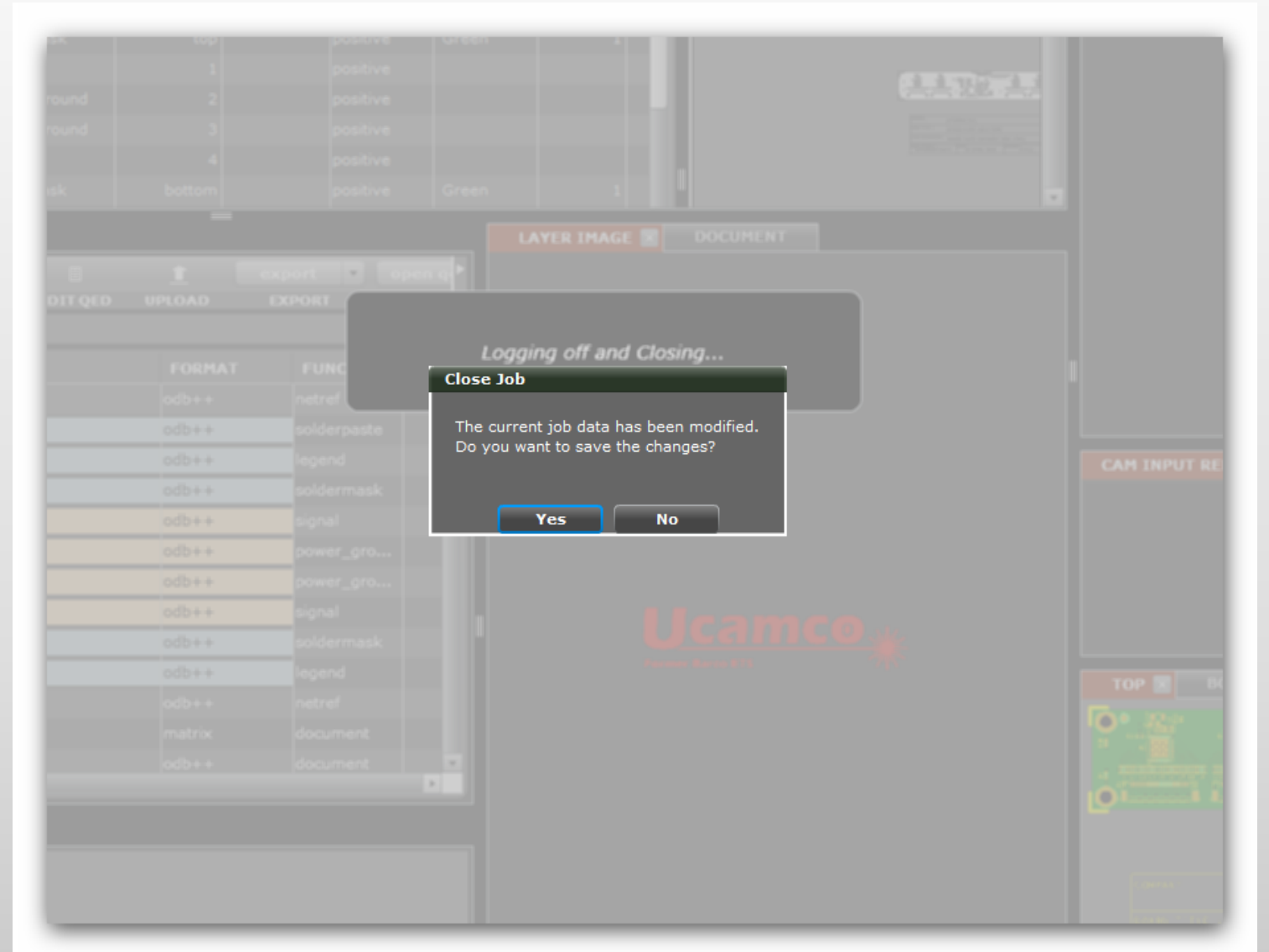
Cockpit

Check on open jobs

If a job is still open when leaving the Cockpit a message will pop up asking what to do.

The message appears only if the job has been edited.

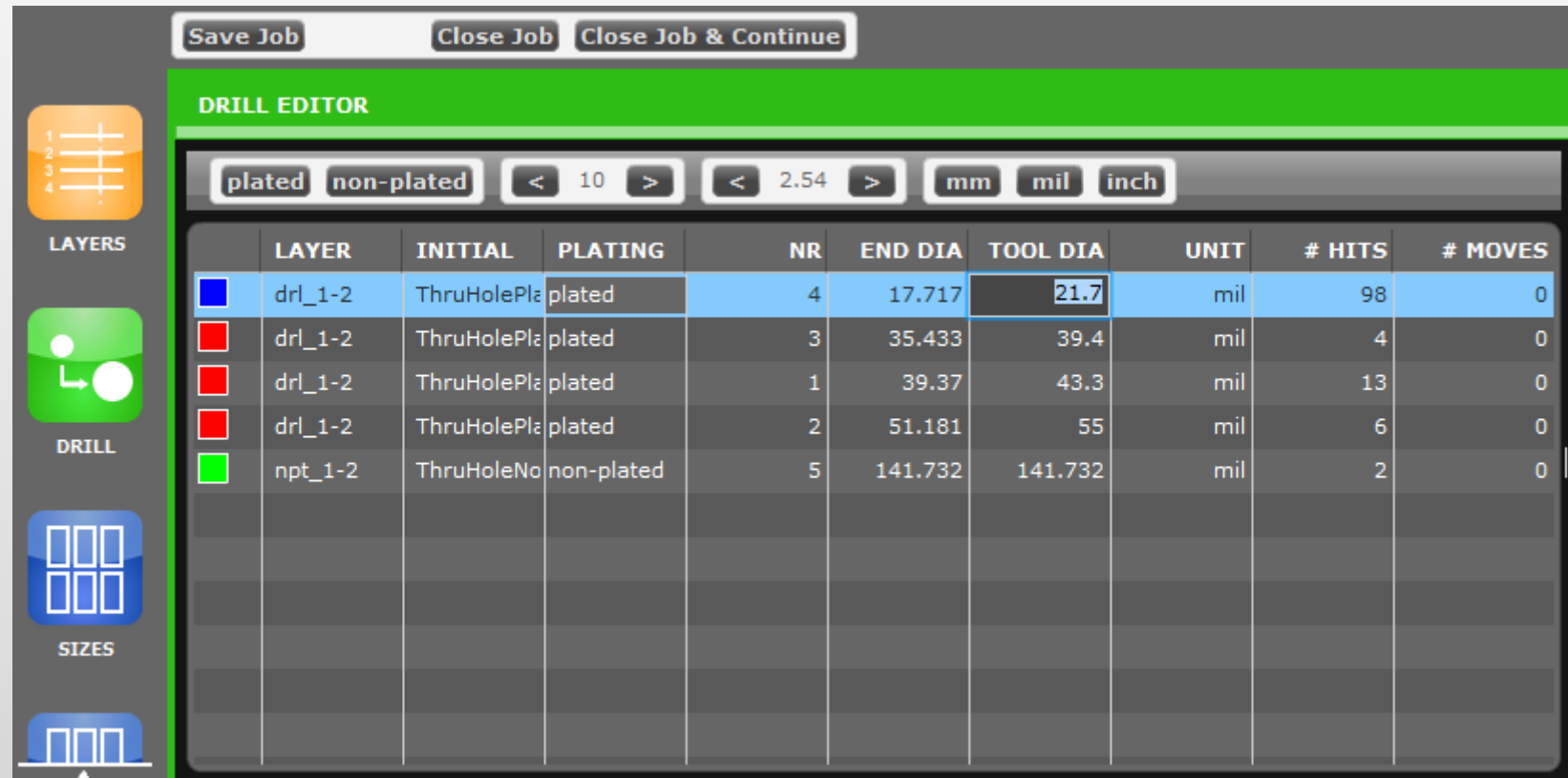
- *This avoids accidentally locked jobs*



Cockpit

Edit Drill Tool Sizes

- Integr8tor previously allowed for applying a “tool table” to change the drill sizes allowing to perform the analysis with the drill tool sizes rather than the finished hole sizes.
- You can now edit the tool size of the drill tools in the Drill Editor, even if you initially applied a tool table
- *This allows to fine-tune sizes once more information (e.g. fab drawings) is available to you.*



The screenshot shows the DRILL EDITOR interface with a table of drill parameters. The table has columns for LAYER, INITIAL, PLATING, NR, END DIA, TOOL DIA, UNIT, # HITS, and # MOVES. The first row is highlighted in blue, showing a drill tool with a TOOL DIA of 21.7 mil. The interface also includes buttons for Save Job, Close Job, and Close Job & Continue, and a sidebar with icons for LAYERS, DRILL, and SIZES.

| | LAYER | INITIAL | PLATING | NR | END DIA | TOOL DIA | UNIT | # HITS | # MOVES |
|---|---------|------------|------------|----|---------|----------|------|--------|---------|
| ■ | dr1_1-2 | ThruHolePl | plated | 4 | 17.717 | 21.7 | mil | 98 | 0 |
| ■ | dr1_1-2 | ThruHolePl | plated | 3 | 35.433 | 39.4 | mil | 4 | 0 |
| ■ | dr1_1-2 | ThruHolePl | plated | 1 | 39.37 | 43.3 | mil | 13 | 0 |
| ■ | dr1_1-2 | ThruHolePl | plated | 2 | 51.181 | 55 | mil | 6 | 0 |
| ■ | npt_1-2 | ThruHoleNo | non-plated | 5 | 141.732 | 141.732 | mil | 2 | 0 |

Workflow

Handling of multiple data formats in the archive



If an archive contains multiple formats it is now possible to select the preferred format

- The preferred format will be used for further processing
 - The preferred format can be defined in the system preferences
 - The preferred format can also be selected during (re)submit
- *This means you no longer have to manually split these multiple format data sets outside of Integr8tor*

Workflow

Handling of multiple data formats in the archive



Customer ZIP-File with multiple formats

- When choosing ODB++ as the preferred format the other image data will still be converted so you are able to view them in the Cockpit
 - *This is useful e.g. if a fab drawing is provided as RS274X data but is not present as a layer in the ODB++ file*
- When choosing RS274X data over ODB++ the matrix file will be converted as a text file
 - *This allows to see if the ODB++ file structure contain data that is not otherwise present, e.g. you did not get an Excellon2 file for the drills but the ODB++ is complete*
- If the format chosen was no good you can now simply resubmit the data set and choose an alternative format
 - *There is no longer a need to create a new entry in the queue for this*

Workflow

Handling of multiple data formats in the archive



The screenshot displays the Ucamco software interface. At the top, there is a 'JOB QUEUE [58]' window with a table of jobs. Below it is a 'FILE LIST' window showing a list of files with their original names, renamed names, formats, and functions. A red box highlights the top portion of the file list, and a blue box highlights the bottom portion. To the right, a 'LAYER IMAGE' window shows a technical drawing of a PCB.

| LOCK | ID | HANDLER | ORIGINAL DATA | LOCATION | PROGRESS | FULL DURATION | PRIO | USER NAME | ARTICLE ID | INPUT COMMENT |
|------|----|---------|----------------------------------|---------------------|----------|---------------|------|-----------|------------|---------------------|
| | 62 | | ZXY100-U-OFF-128-A (21.4.10).zip | QED With Image Data | Review | 04:24 | 3 | Ron | | Mixed formats prefe |
| | 61 | | ZXY100-U-OFF-128-A (21.4.10).zip | QED With Image Data | Review | 06:01 | 3 | Ron | | Mixed formats |

| INITIAL | RENAMED | FORMAT | FUNCTION | POS |
|--|------------|-----------|--------------|-----|
| smt.dpf | Mask-T | odb++ | soldermask | |
| top.dpf | Top | odb++ | signal | |
| l2-vcc.dpf | Inner2 | odb++ | power_gro... | |
| l3-sig.dpf | Inner3 | odb++ | power_gro... | |
| bottom.dpf | Bot | odb++ | signal | |
| smb.dpf | Mask-B | odb++ | soldermask | |
| ssb.dpf | Legend-B | odb++ | legend | |
| zxy100-u-off-128-a_v6_cadnetb.dpf | Netref-B | odb++ | netref | |
| matrix | | matrix | document | |
| zxy100uoff128-a_dd.dpf | document | odb++ | document | |
| drill.dpf | Drill_pt | odb++ | plated | |
| rout.dpf | Drill_np | odb++ | rout | |
| profile_pcb.dpf | Outline | odb++ | outline | |
| height_top.dpf | document_3 | odb++ | document | |
| zxy100uoff128-a_ab.dpf | document_1 | odb++ | document | |
| zxy100uoff128-a_at.dpf | document_2 | odb++ | document | |
| ZXY100-U-OFF-128-A-1-4.drl | | excellon2 | document | |
| ZXY100-U-OFF-128-A.DSN | | extern | document | |
| ZXY100-U-OFF-128-A_Schematic_Diagram.pdf | | extern | document | |
| ZXY100-U-OFF-128-A.brd | | extern | document | |
| ZXY100-U-OFF-128-A.dwg | | extern | document | |
| ZXY100-U-OFF-128-A.dxf | | extern | document | |
| ZXY100-U-OFF-128-A.ipc | | ipc356 | document | |
| ZXY100-U-OFF-128-A.ipc | | ipc356 | document | |
| ZXY100-U-OFF-128-A_AB.art | | ger274x | document | |
| ZXY100-U-OFF-128-A_AT.art | | ger274x | document | |

Job processed with the ODB++ data as the Preferred Import Format

Shows the RS274X, Excellon2 and IPC-356 data as PDF

Workflow

Stop after AutoInput



- A large customer in the US is using Integr8tor as part of their planning process. They have very complicated stackups for very high-layer count jobs that are often only documented in fabrication drawings.
 - Rather than potentially process jobs with incorrect stackups, resulting in wasted time, they preferred to stop after the Input process to make sure the stackups are correct.
 - A preference key has been introduced that allows to always stop the workflow after AutoInput to complete the job data before the analysis is started.
- *Allows for a smoother operation for those customers that have very complex, long-running data sets.*

QED

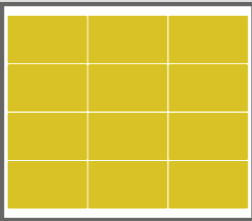
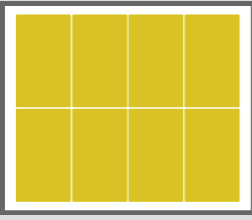
Production Panel Drawings

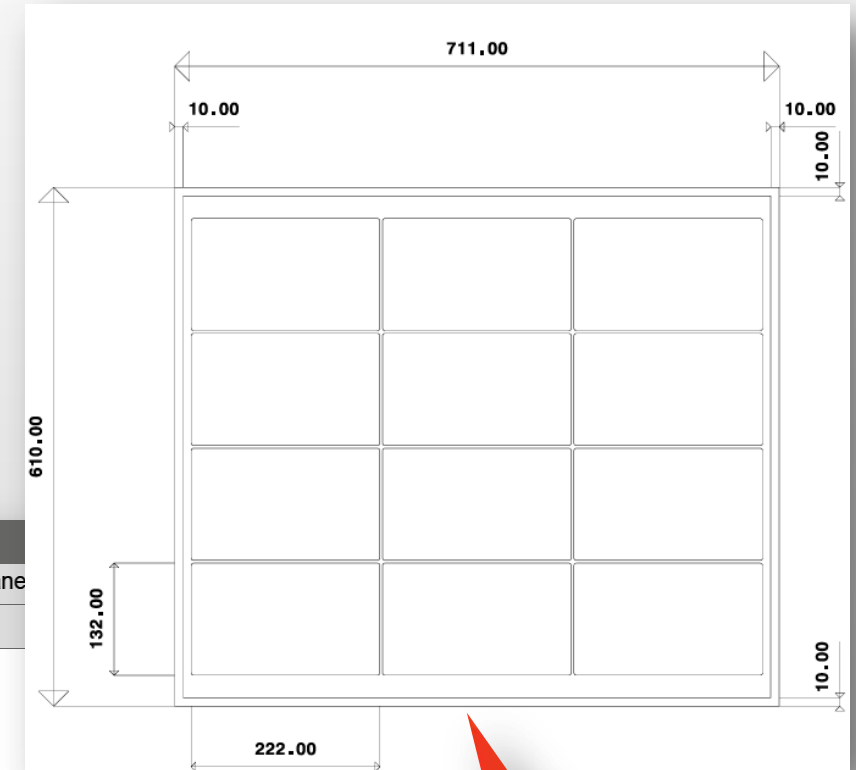


For each calculated production panel a drawing is added

- This drawing shows all the relevant dimensions
- *More details automatically made available reduce time downstream*

Working panel calculation

| Production Panel (Working Panel) | | | | | | |
|----------------------------------|-----------------|-----------------|--|--------------|------------|-------|
| Panel Name | Panel Size | Useful Area | Drawing | Pieces/Panel | Panel Fill | Panel |
| | mm x mm | mm x mm | | | % | |
| 28x24 | 711.00 x 610.00 | 691.00 x 590.00 |  | 12 | 88 | |
| 24x20 | 610.00 x 508.00 | 590.00 x 488.00 |  | 8 | 83 | 76 |



Detailed drawing for each calculated result

QED

Drill and more...



- Plated drills that are missing a ring at the end of their span are now reported
 - *Catch potential design errors before they reach CAM*
- NPTH holes hitting functional copper are now reported
 - *Catch potential design errors before they reach CAM*
- Extra information is available to clearly identify pad and corresponding tool sizes. This information is available in both Checkpoint as well as the UFD file for viewing with Ucam's View Errors.
 - *Speeds up review of potential DfM issues*
- Review of SMD Pad identification
 - *More accurate SMD Pads count*

Output

Easier integration



- ODB++ output
 - ODB++ now supports both the V6 as well as V7 format. The required version can be defined in the preferences.
 - Uncompressed output can be generated
 - *Eliminates the Import step during import in the CAM system*
 - More standard ODB++ shapes will be used in output
 - *Easier to handle in the CAM system*
 - Native shapes are exported in ODB++, like for example diamond shapes
 - *Easier to handle in Genesis*
 - The Gerber macro names are also be used in ODB++
 - *Mimics the behavior of Genesis*
 - Attributes present in the incoming ODB++ data are now passed along during the output
 - *Results in the original step to truly be the original*
- ***All this results in a more robust integration***

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