Ucamco Webinar Explores Benefits of Front-End Automation Tool

Article by Pete Starkey
I-CONNECT007

I have known the Ucamco people for over 30 years and recognise their company as an industry-leading provider of PCB CAM and pre-CAM software, as well as laser photoplotters and direct imaging systems. The team has always endeavoured to understand customer needs—often to anticipate them—and to respond with innovative solutions.

At the 2019 productronica exhibition in Munich last November, in a conversation with Ucamco managing director Karel Tavernier, I learned about a new concept in front-end software: iamcam, with "iam" standing for intelligence-aided manufacturing. Later, at this year's IPC APEX EXPO, I had the opportunity to speak with Luc Maesen, director of Ucamco USA, and learn a little more about an automated workflow system using artificial intelligence on top of Ucamco's automation engine to do the same for CAM as had been done for pre-CAM with Integr8tor software.

In the words of Tavernier, "The main goal is to take the drudgery out of CAM work. For standard boards, there's no reason why the CAM process can't be done completely automatically." Maesen commented, "We don't necessarily see it as a replacement of every CAM operator, but the vast majority of the work can be done by this fully-automated programme, which allows your experts to concentrate on the ones where you really need to pay attention because they have special requirements."

When it was announced that there would be a webinar to describe the details of iamcam, I immediately signed up. The event was professionally presented by Ucamco applications engineers. Adam Newington provided the commentary, Denis Morin drove the live demonstration, and Sylvia Liemer responded to questions from the audience.

Newington introduced iamcam as a new, automated PCB front-end workflow, designed to overcome the challenges faced daily by typical PCB fabricators of tooling-up many low-added-value standard jobs with manual CAM—expensive, time-consuming, and with potentially inconsistent quality. It offers a client/server solution for off-loading routine PCB CAM data preparation, reducing front-end process-

ing time and costs, avoiding human error, and enabling higher throughput with less manpower. He set out to explain how iamcam fitted in and how it worked.

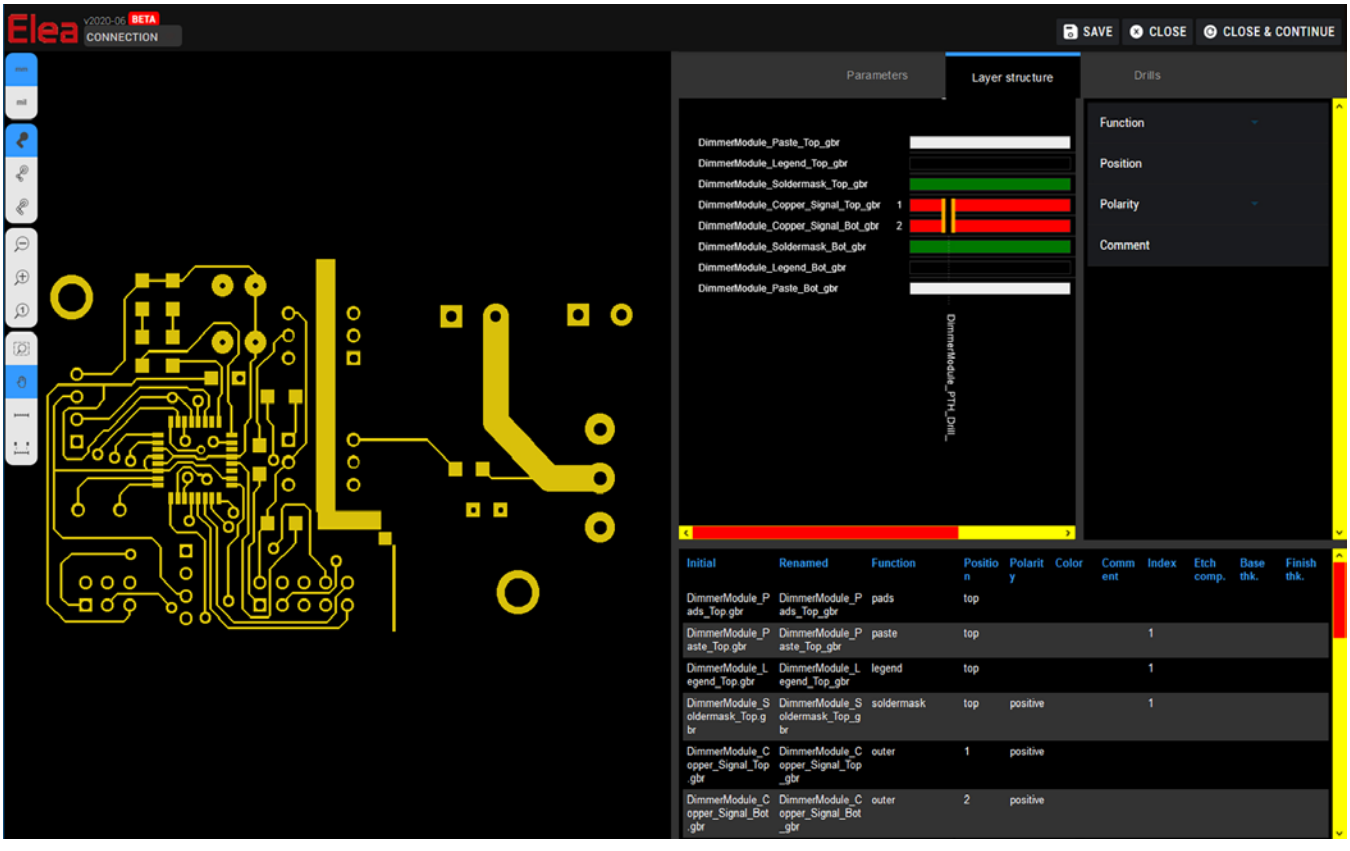
Generally, as-received data is not good enough to go straight into production without a series of checks and setting-up operations, monotonous if performed manually. The primary purpose of iamcam is to help the PCB fabricator to automate the CAM process. In the majority of cases, the iamcam workflow-based solution takes care of all those manual operations necessary to get the job into production as quickly as possible. Combining the workflow system with a web-server allows it to work in the background as an "automation engine."

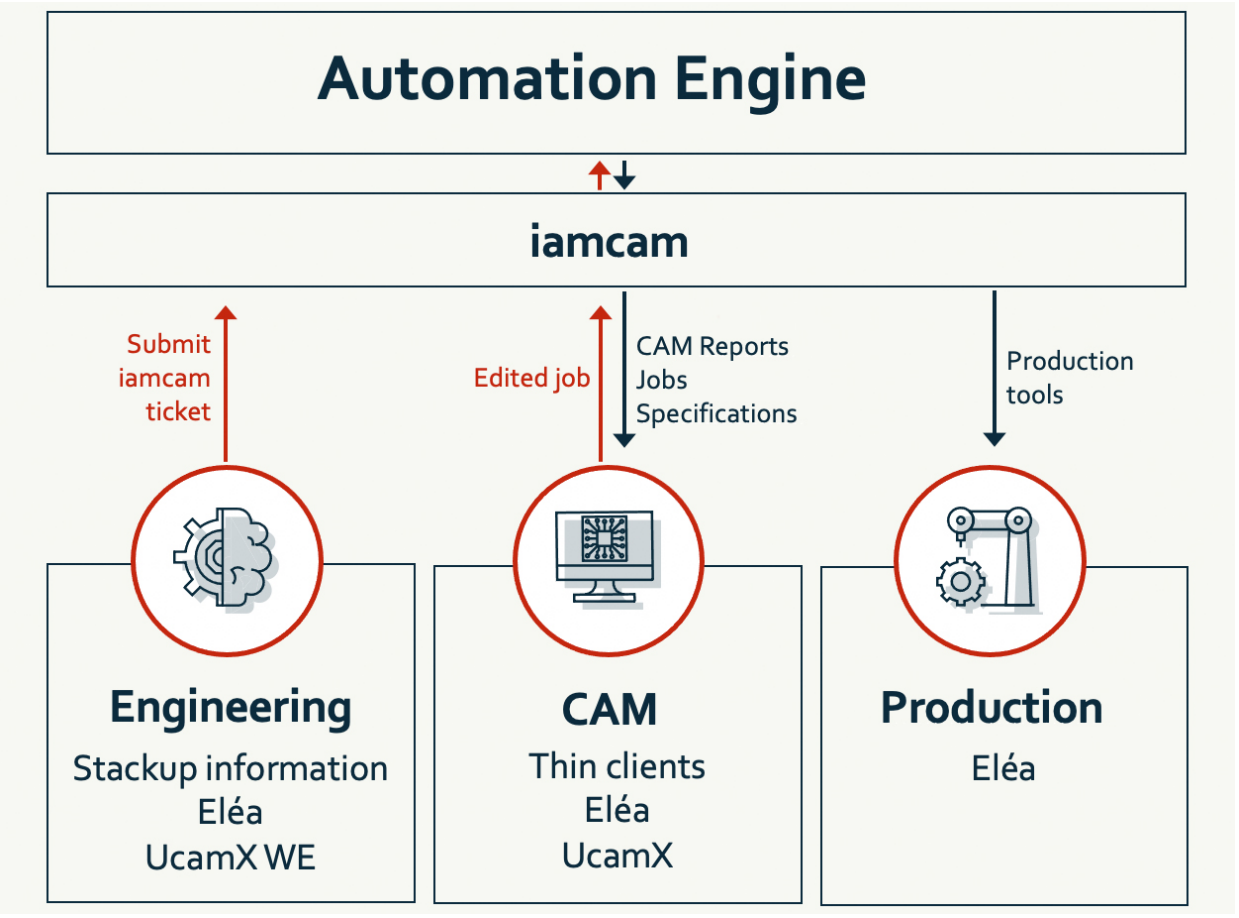
The heart of the iamcam system is a suite of artificial intelligence (AI) algorithms that examine and analyse the data, filter out good from bad, and make assessments and judgments that enable the system to output production-ready, single-image data of the required quality. Iamcam has the proven capability to run a large percentage of jobs through the front-end in a fully automatic mode.

Newington explained that the infrastructure is capable of hosting additional business processes; his example showed iamcam working side-by-side with Ucamco's Integr8tor PCB data entry and design analysis tool within the automation engine. In his words, "We want to drop-in the data, give it a push, and then have 70% of the jobs prepared fully automatically."

The primary purpose of Integr8tor is to extract the information needed to make an accurate quote quickly. Looking at the two tools next to each other, Integr8tor supports the presales and quotation environment, providing engineering and quotation data. Now it has a working partner in iamcam. Once the order is won, and the job needs to be set up for production, it is no longer necessary to transfer the data to a CAM system; it continues its flow seamlessly within the automation engine and is prepared fully automatically.

In this example, additional information required to enable iamcam to complete its job was supplied in the form of an iamcam "ticket"—a set of instructions from an external source, such as an ERP system. The iam-





cam ticket defined specific requirements such as minimum annular rings and clearances, depending on IPC classification, copper weights, layer count, etc. And if all the requirements were not quite reached but close, it listed the type and scale of edits that the system was approved to make without having to refer the job back to the customer.

At the time a job was launched into the iamcam process, there were several options for choosing the ticket: automatically from a library of pre-defined specifications, set by the ERP, scripted using the characteristics of the job, or added manually. Whatever might be found to be wrong or missing in the data, there were tools available to fix it.

Newington likened the situation to the crew of an aircraft carrying out a pre-flight check. The checklist made sure the data was verified and properly met the requirements before being allowed to proceed to any automatic manipulation or CAM processing. Minor problems were put on a to-do list to be fixed manually using simple web-based applications and returned to the input stage of the automated workflow. Jobs shown to require serious intervention were re-routed to the regular CAM system.

Once a job had been through iamcam processing, it was subject to rigorous analysis within the system to verify that everything had been done correctly before being qualified to receive a green light, ready to go into a production panel. Red-light jobs were obviously not candidates for automatic processing. In between were jobs where, although the data had been processed correctly, they were not capable of complying exactly with the definitions on the particular ticket class that had been assigned. In such cases, it was possible to assign a ticket to a higher class and resubmit the job to the system.

All became clear when Morin demonstrated a series of real-time examples with the iamcam user interface live on-screen to illustrate in detail the features that Newington described.

And, in response to questions from the audience, Morin used the system to display the procedure and results of particular editing operations.

It was clear after watching this webinar that automation is the answer. An existing team would be able to complete more jobs on a daily basis by automating recurring, tedious, and non-value-added front-end tasks. It increases quality by reducing errors and increases efficiency and throughput by standardising processes, saving valuable time and money overall.

Considering the price tag of late deliveries, scrap, or production standing idle, iamcam is worth taking a look at. This webinar does a good job of explaining the functions and benefits of this exciting development in front-end automation. If you were unable to attend the live event, you can catch it on demand by contacting presales@ucamco.com. **PCB007**

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- For more about iamcam, visit ucamco.com/en/software/cam/iamcam
- Recordings of the other webinars are available at ucamco.com/en/webinars

Related Videos

1. Pete Starkey, "Real Time with... productronica 2019: Interview with Karel Tavernier," I-Connect007.
2. Pete Starkey, "Real Time with... IPC APEX EXPO 2020: Interview with Luc Maesen," I-Connect007.

Pete Starkey is an I-Connect007 technical editor based in the U.K. with over 45 years' experience in the PCB industry. He is also a Fellow and Council Member of the ICT, an Honorary Fellow of the EIPC, and a member of the European Technical Committee of the SMTA.

BYU Partnering with NASA to Send a 'Spacecraft Selfie Cam' into Space on Official Mission

November 11, 2020

Brigham Young University students have created a cube satellite that will launch into space on an official NASA mission later this year. The 10-centimeter CubeSat is outfitted with cameras on all six sides and will make it possible to inexpensively detect damage on the exterior of a spacecraft that cannot be seen in other ways.

"It's a satellite that is designed to take pictures of another satellite," said BYU engineering professor David Long. "In other words, it's a spacecraft selfie cam."

Two versions of the BYU CubeSat will join satellites from eight other universities as part of NASA's ELaNa 20 mission

The 10 nanosatellites will be loaded into a variety of tubular dispensers and deployed by a pressurized spring once in space. The moment BYU's CubeSats are deployed, they will boot up in less than a second and start recording video. Later, antennas will be triggered, and the nano satellites will begin sending data

Those images and video will be transmitted back to Earth, where engineers, including those at BYU, will be listening. It will be an impressive feat for a tiny, but intricate satellite–and a first for BYU's College of Engineering.

There is a lot of tech packed in 144 square centimeters, including six solar panels, four battery circuit boards, a radio circuit board, a computing board, and more than 25 cables. According to engineers, that's four times as many cables as a desktop computer at only a sixth of the size.

"It's pretty small, but even the simplest spacecraft can be quite complex," Long said.

(Brigham Young University)