Your PCB proto right first time

Making boards in the eC-cloud

Electronics & Automation 2015

EURO CIRCUITS

ELECTRONICS & AUTOMATION

2/3/4 JUNI 2015 JAARBEURS UTRECHT

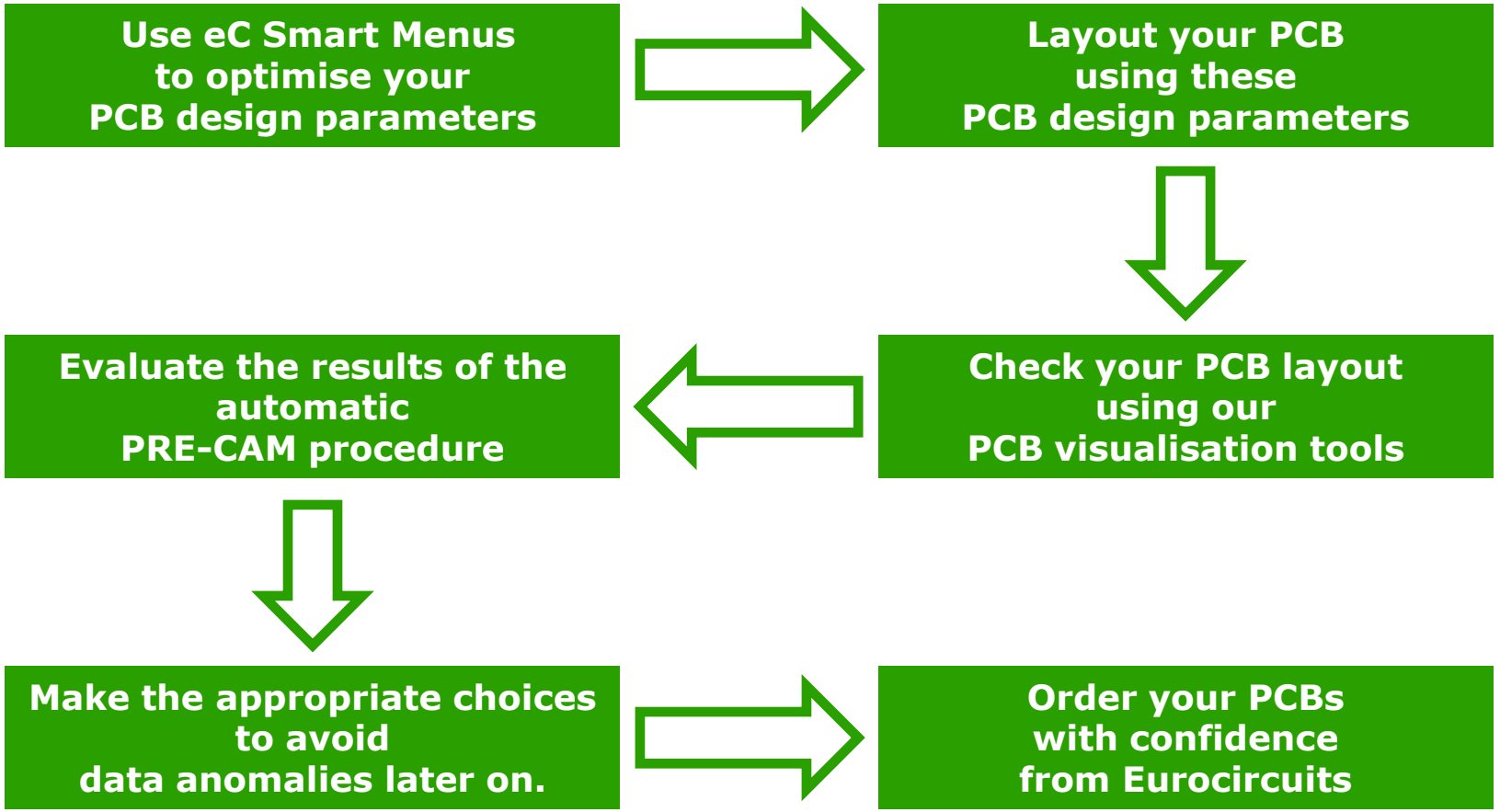
Virtual PCB production - Goals

- Help busy designers get boards “right first time”
  - on time
  - accurate to their intentions
  - at best total cost

- Two inter-related topics
  - Design for Manufacturability (DFM)
    - What are the features that increase board costs?
    - What makes my board harder or impossible to make?
  - Clear data presentation and clear order details
    - How can I be sure the data transfer is accurate?
    - Are there any data issues that will delay delivery?

“Wonderful, but I barely have time to design the circuitry, let alone sort out fabrication.”

Virtual PCB production – How?



What you should know before you start to layout your board?

- What are the PCB cost drivers
  - Board size
  - Base material
  - Number of layers
  - Copper thickness
  - Special multilayer build
  - Blind and buried vias
  - Smallest hole size
  - Minimum track and gap
  - Surface finish
  - Soldermask colour
  - Legend colour
  - …….
- What makes a PCB harder/impossible to make?
  - Heavy copper + narrow tracks/gaps
  - Too small holes in too thick boards (aspect ratio)
  - Incompatible surface finishes
  - Blind/buried via combinations …..

"Stop! How can I take all this on board?"

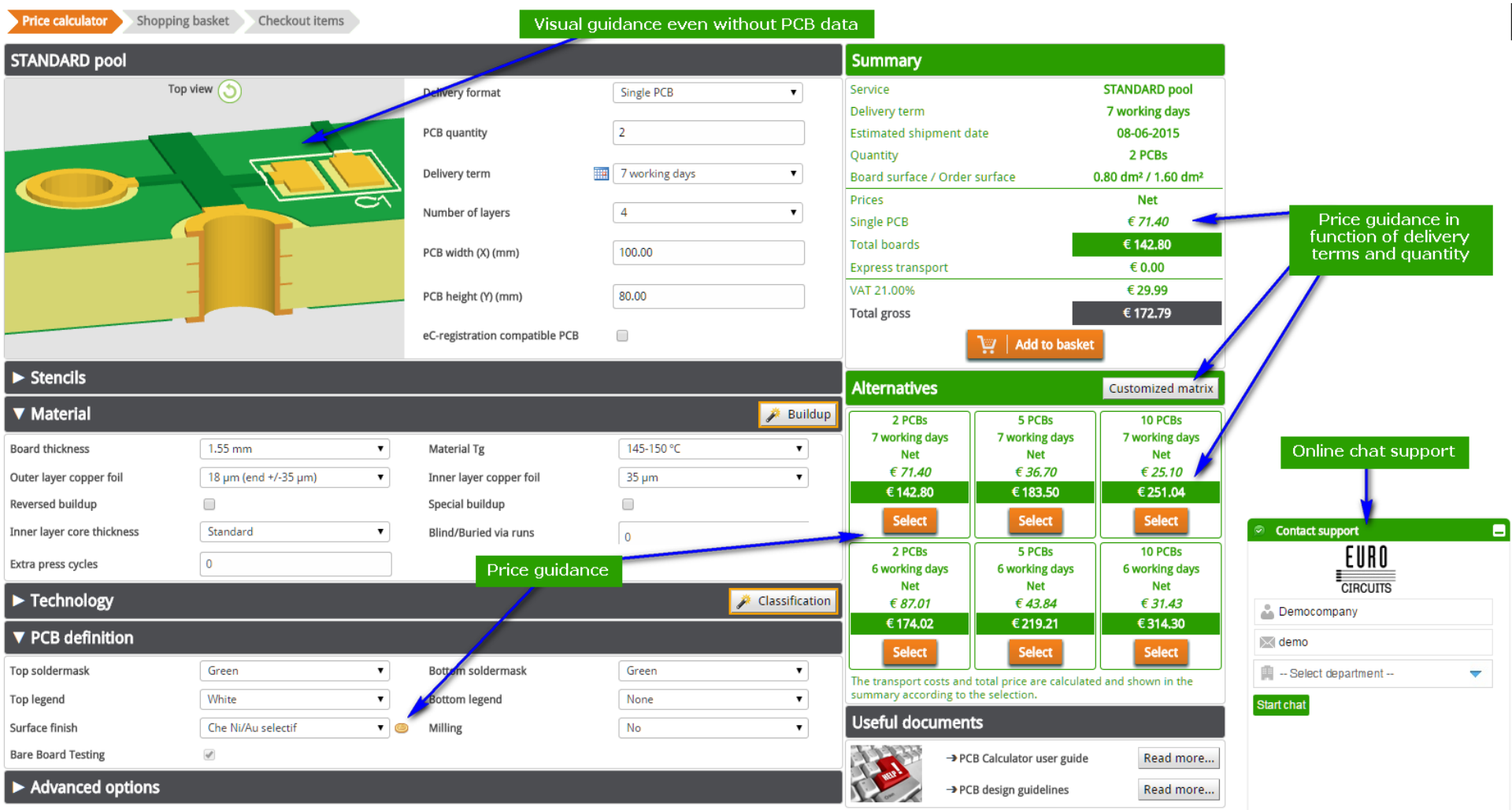
Which tools are available?

- Eurocircuits offers DFM:
  - smart menus that:
    - Are specific to the base material of your choice
    - Help you select the most effective build-up (+700 builds)
    - Help you select the technical classification of the board
    - Validate all chosen technical parameters (+300 rules)
    - Validate blind and buried via builds
    - Give price guidance on all chosen options
  - online help at any point in the flow

    => Help define the smartest design parameters for your PCB

- Eurocircuits guarantees:
  - technology standards that any volume fabricator can make
  - Base materials that guarantee high reliability during assembly and afterwards during field operation

Which tools are available?



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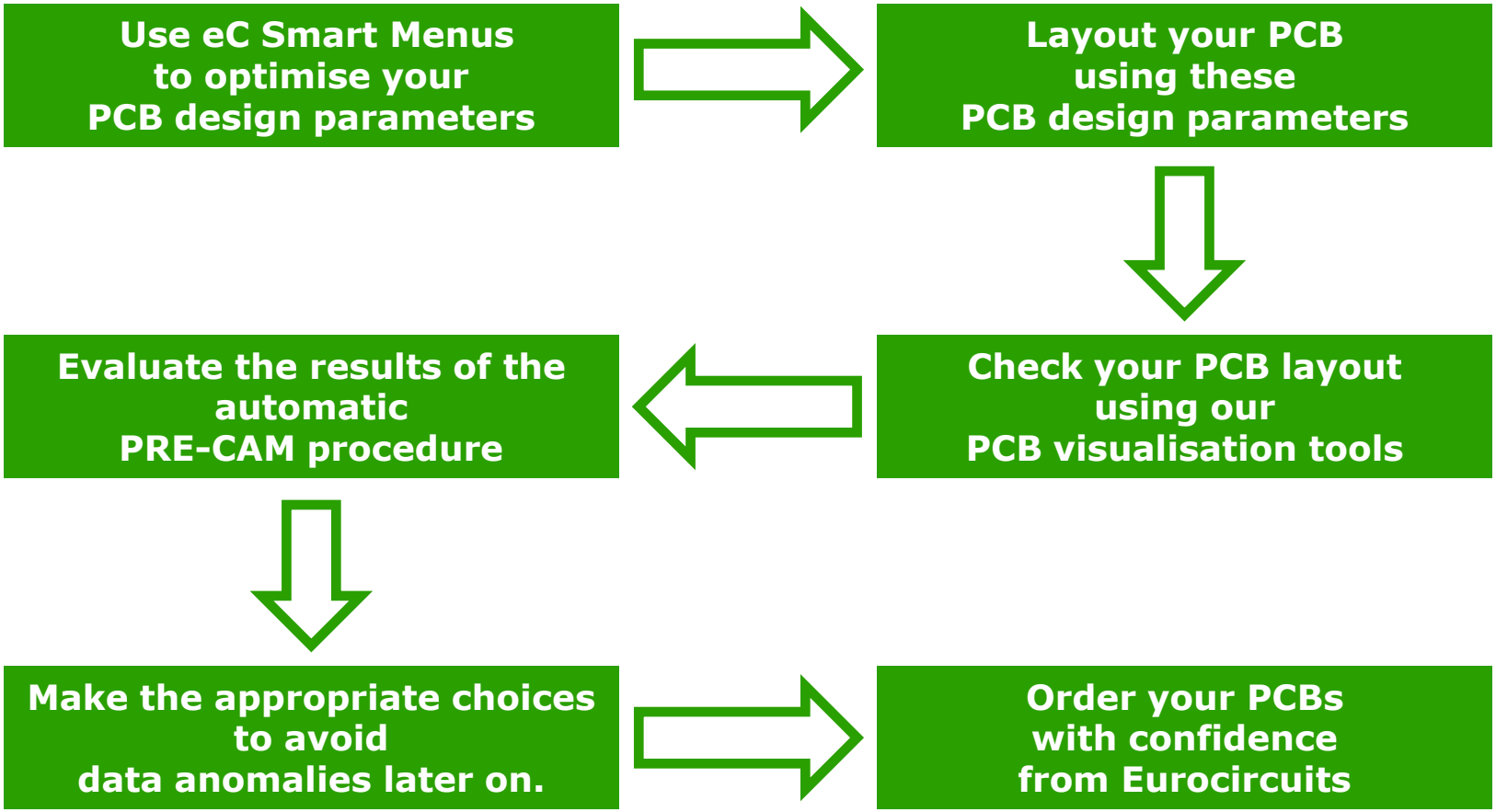
Which tools are available?

Virtual PCB production – so far

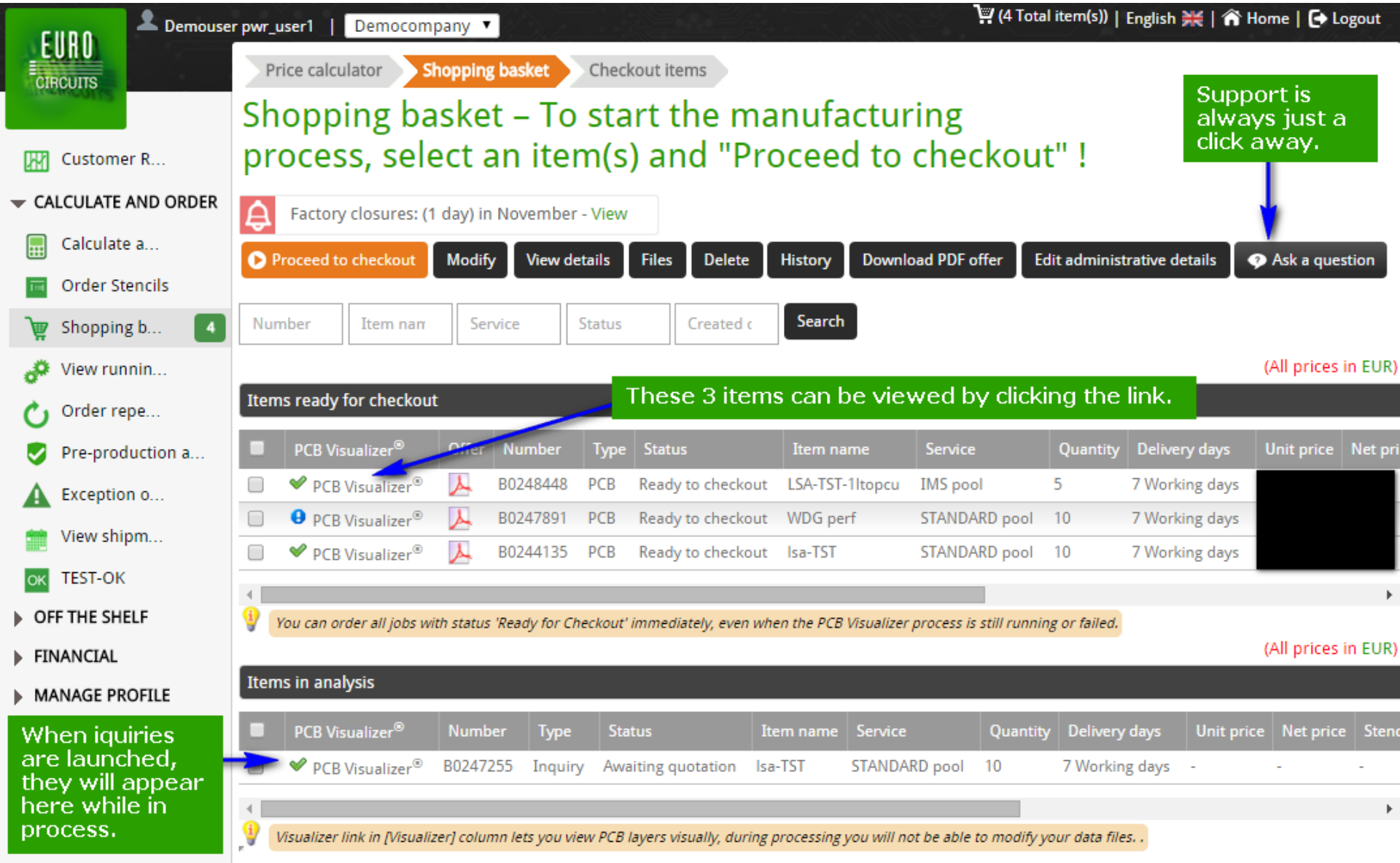
- Your design parameters are defined
  - According to your technical expectations
  - You know how fast you can get your boards
  - At which cost that suits you
- Time to start working on your layout

"End of part 1"

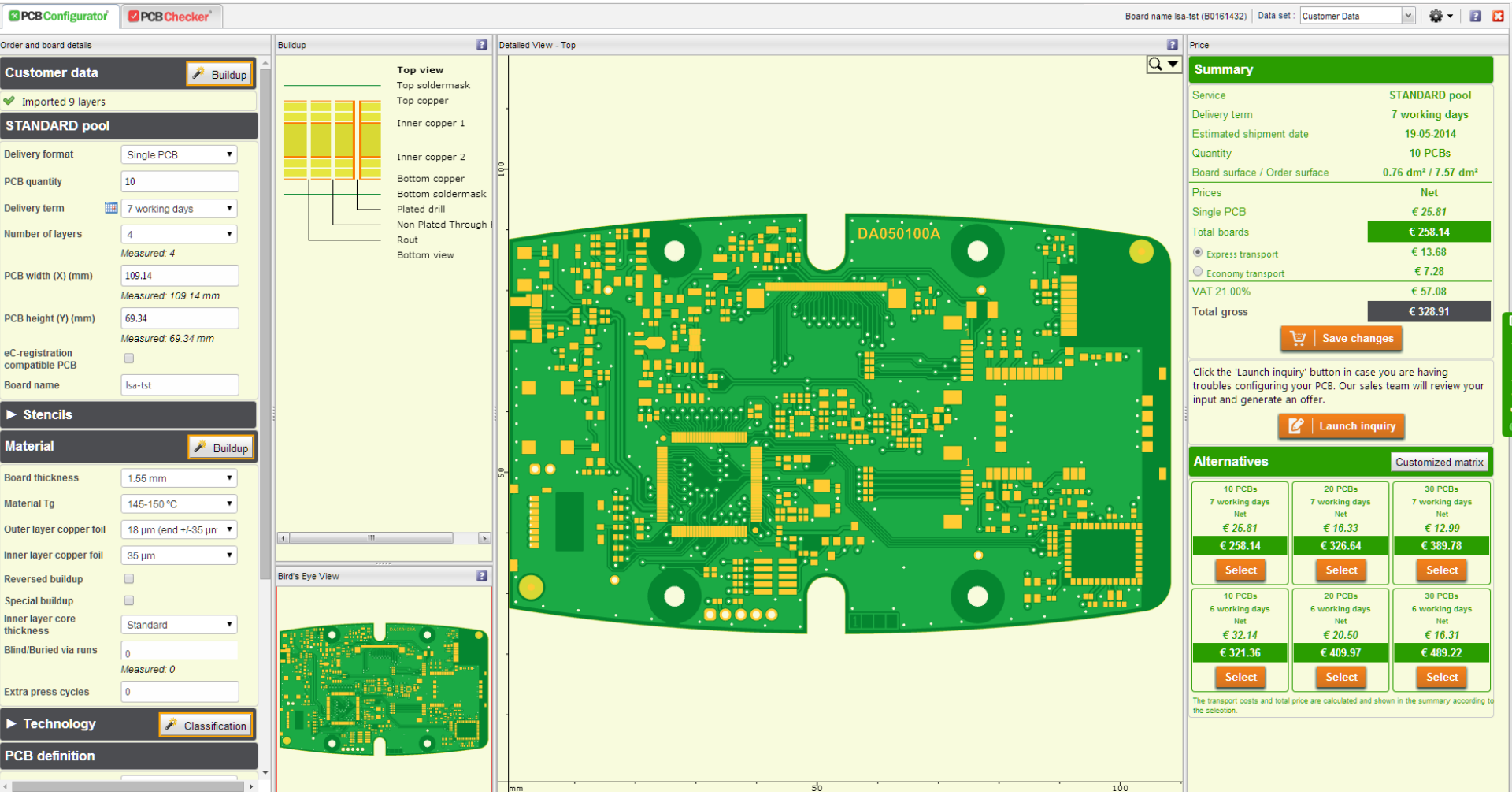
Virtual PCB production – How?



Your PCB is ready for viewing.



Your data interpreted & visualized



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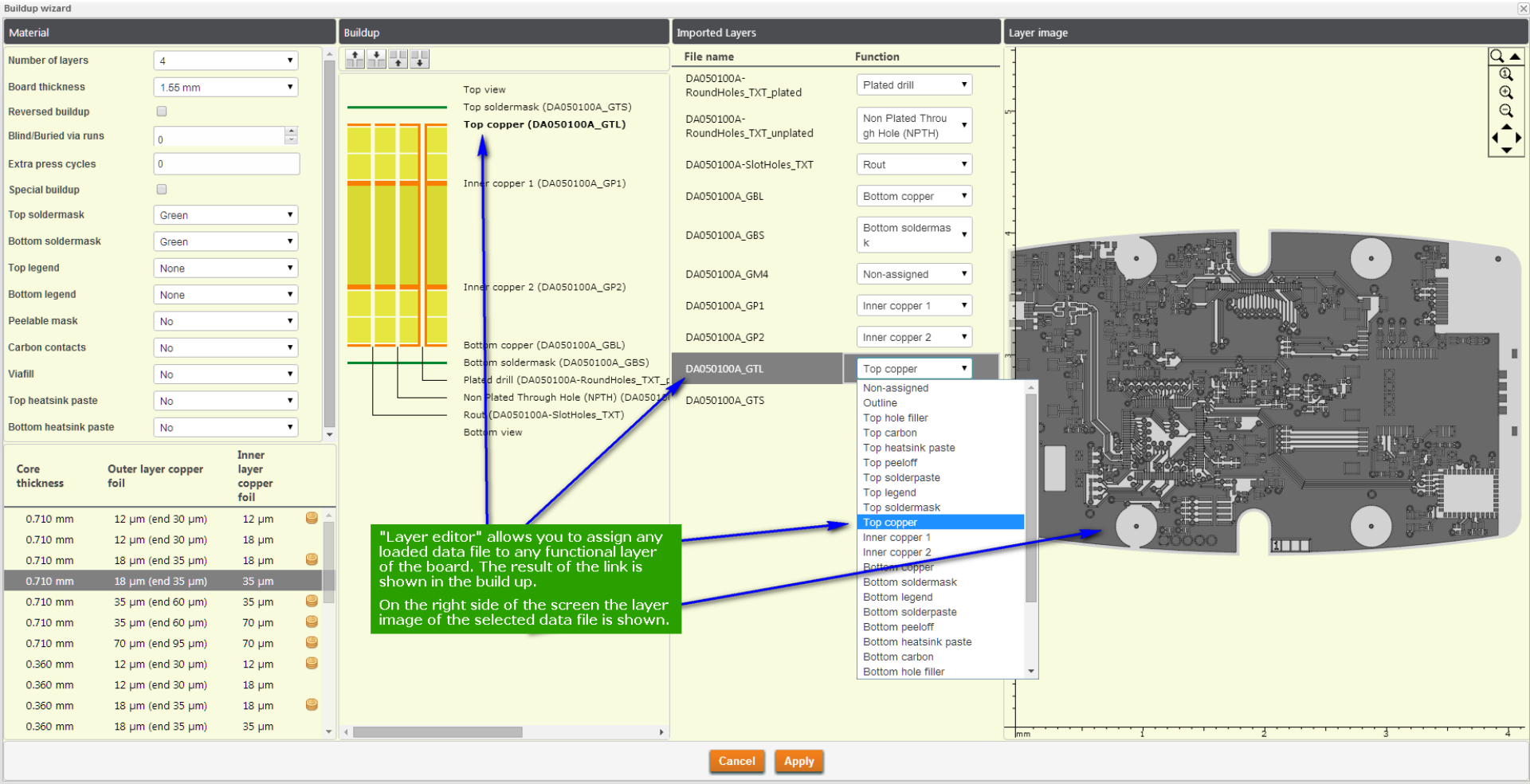
Remove data ambiguities online



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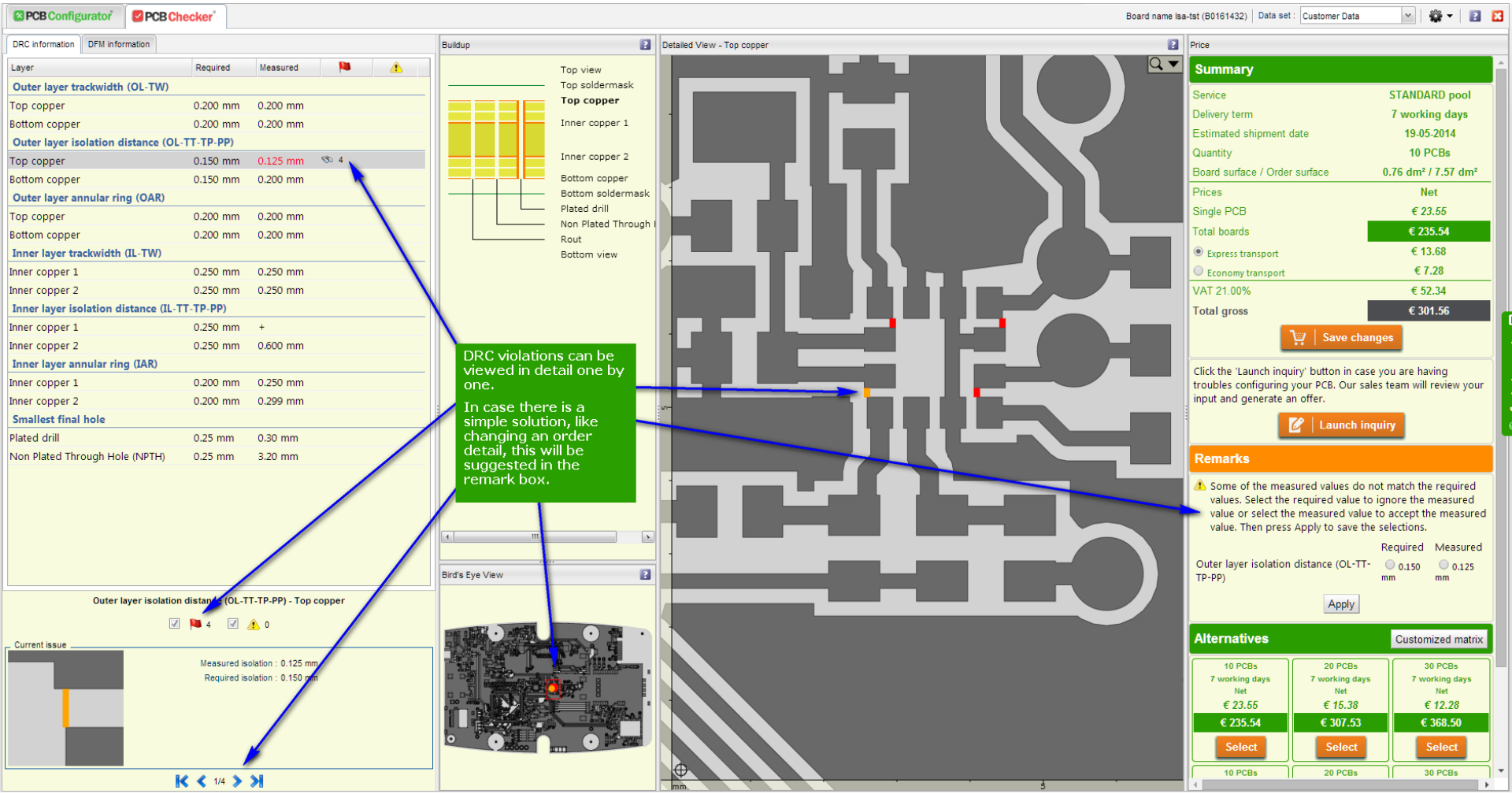
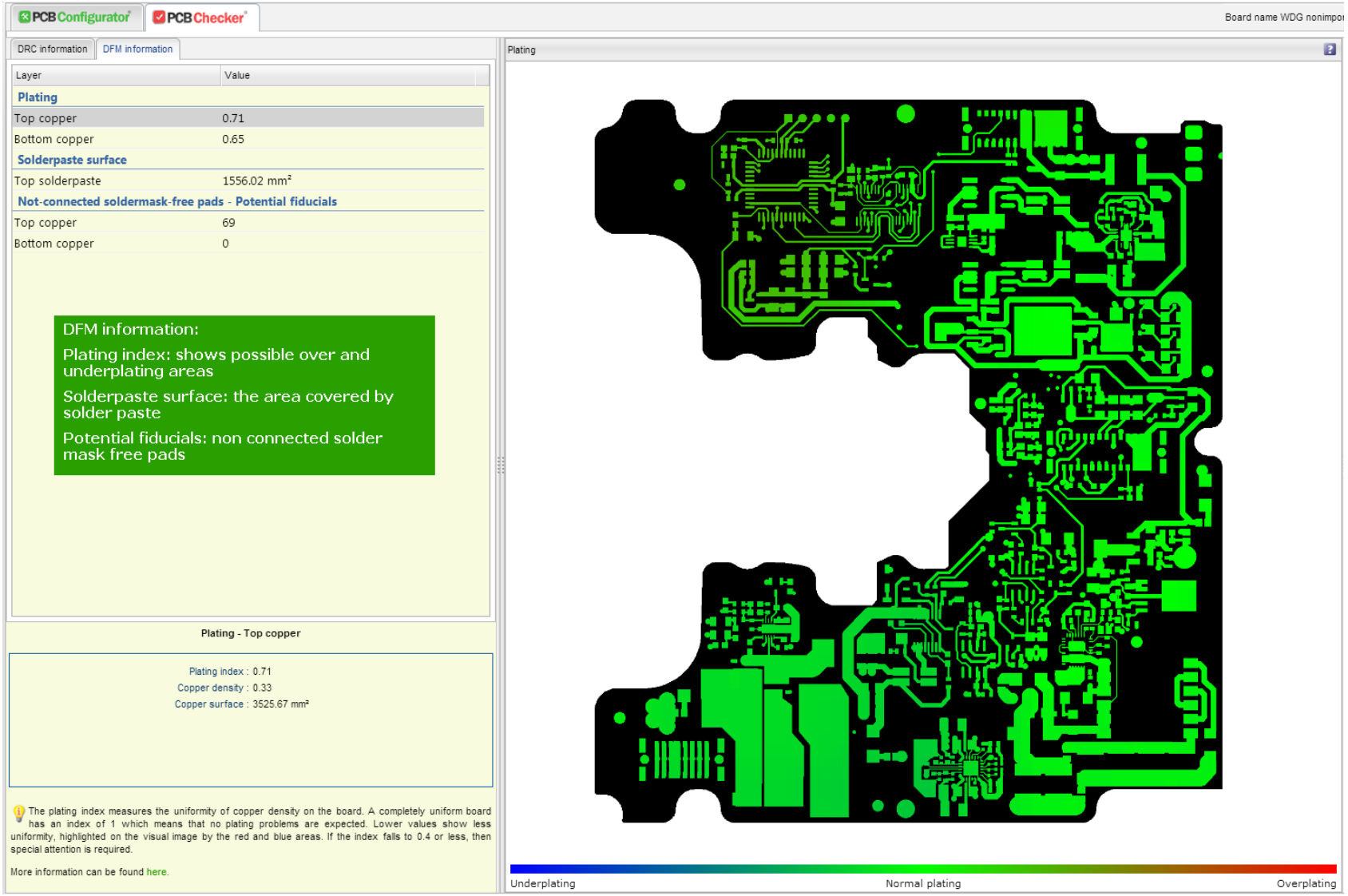
Evaluate possible DRC issues



Evaluate possible DFM issues



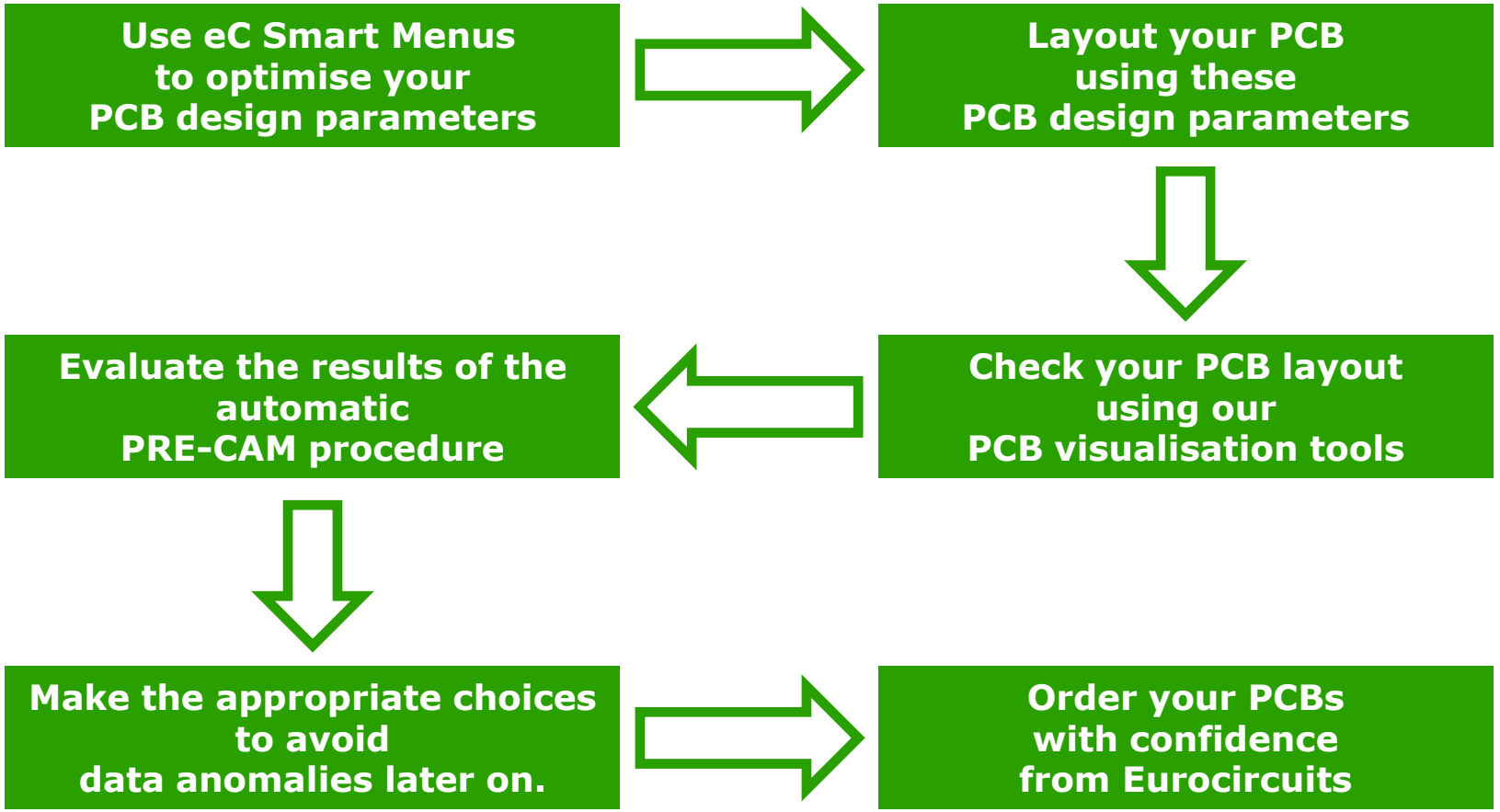
Fine-tune your data for individual orders

- Marking editor
  - Move the eC order number, UL-logo,
  - Add QR-code, production date code, text, custom logo
- Panel editor
  - Build a custom delivery panel to suit your particular assembly requirements
- PCB PIXture editor
  - Make your PCBs stand out from the crowd
  - Put a photograph or graphic on your PCB: Gold PIXture, Mask PIXture, Gold Logo
- => all choice are validated on the fly

Your PCB in the eC-cloud so far.

- So far we have helped you to:
  - Define your optimum design parameters
  - Specify all non-Gerber PCB parameters
  - Check if your data is:
    - Readable
    - Complete
    - Understood
  - Visualize your data
  - Check for any DRC issues
  - Check for any DFM issues
- Throughout the whole flow you were in control of:
  - Costs
  - Timings
- Next we need to show you what we will do with your data to make them production ready.

Virtual PCB production – How?



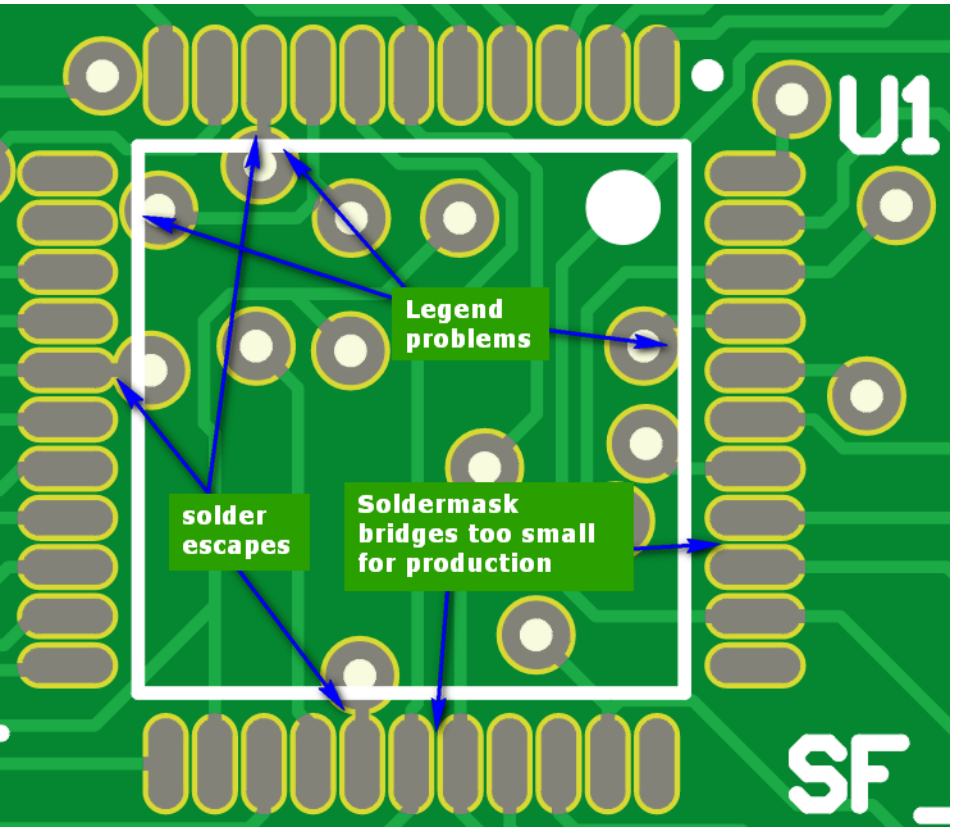
Making your PCB data ready for production, all in the eC-cloud

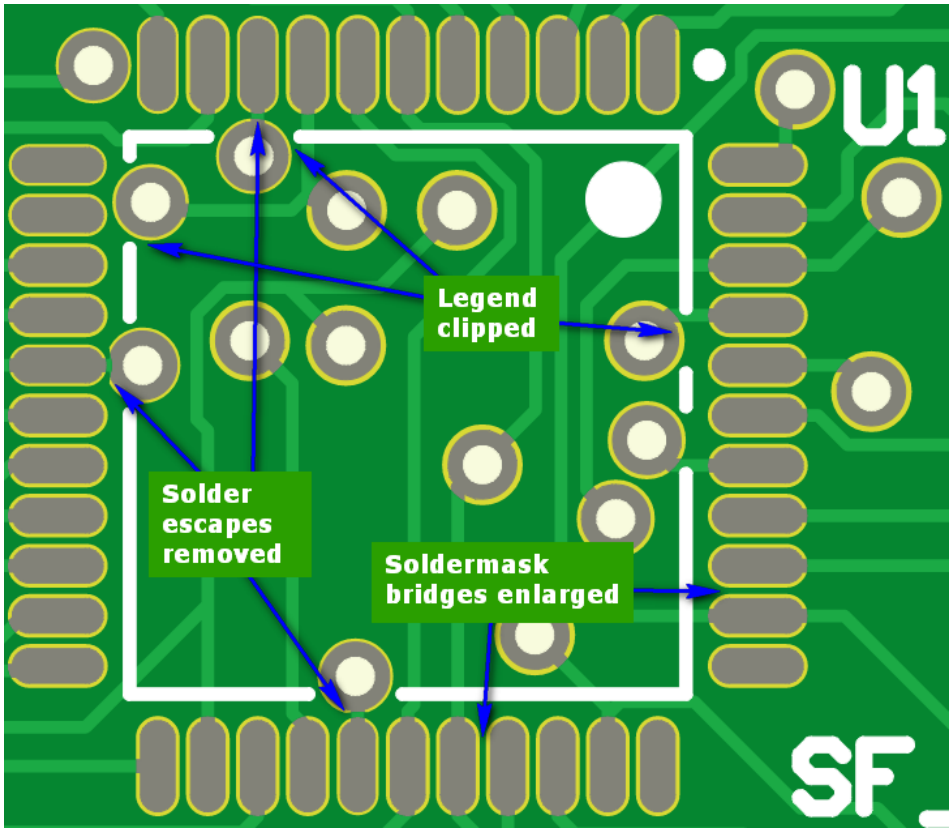
- Process the customer data through our automated CAM routines and present the result as a second set of data:
  - Analyse all drill holes and adapt the production hole diameters
  - Clean and repair all copper layers
  - Adjust the solder mask to production values
  - Legend layer clipping and text width adjustment
  - Prepare a drill drawing indicating all slots and holes
  - Prepare the profiling layer for Single PCB and Customer Panel
  - Prepare the solder paste-layers
  - Prepare all additional layers
    - Gold fingers
    - Peel-off
    - Via-fill
    - Carbon contacts
    - Heat sink paste

More information at www.eurocircuits.com

- => Show PRE-CAM results and present any anomalies and possible solutions, all in the eC-cloud

PRE-CAM in the eC-cloud: some examples

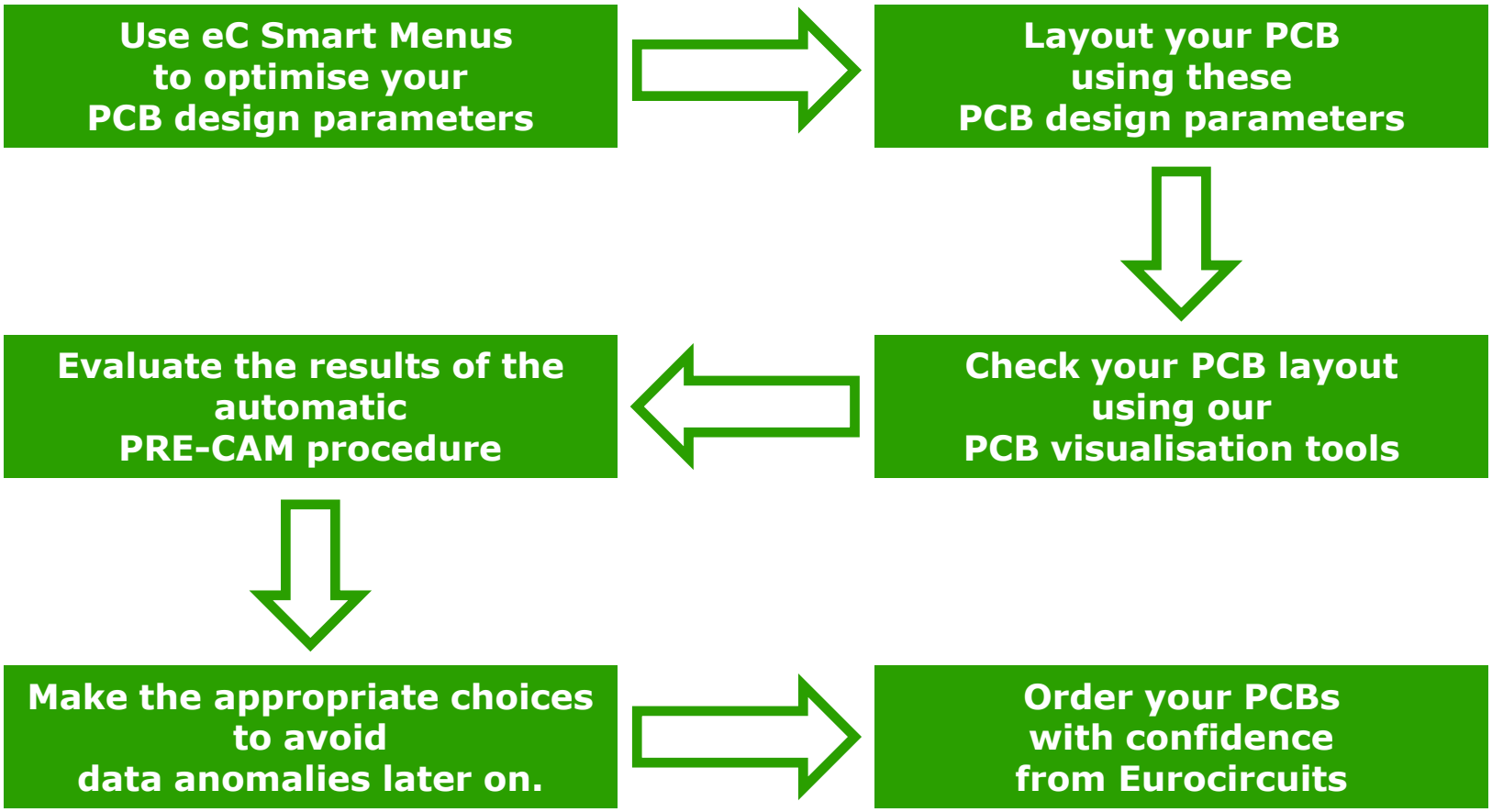




PRE-ORDER solver in the eC-cloud: tomorrow's reality

- Repair DRC issues
  - Order details
  - Classification issues
- Repair DFM issues - Make decisions based upon PRE-CAM results
  - Examples:
    - Choose small solder mask webs at higher cost or no webs
    - Legend or not based on viewing the clipping result

eC - Virtual PCB production



eC - Virtual PCB production

- In the eC-cloud you were in control of:
  - Technical choices
  - Costs
  - Timings
- Your stay in the eC-could was free of charge
- By using our tools in the eC-cloud you have avoided:
  - PCB data issues
  - Manufacturing iteration
  - Loss of valuable time
  - Extra costs
  - Disappointments