

ePIC SVT OB and Discs FIB and CB design update

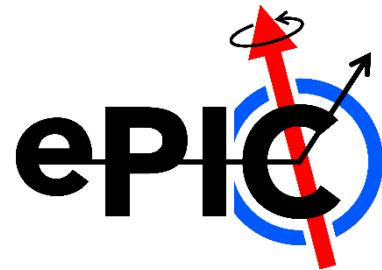
James Glover, Adam Huddart

SVT Working Meeting
University of Oxford

15th December 2025

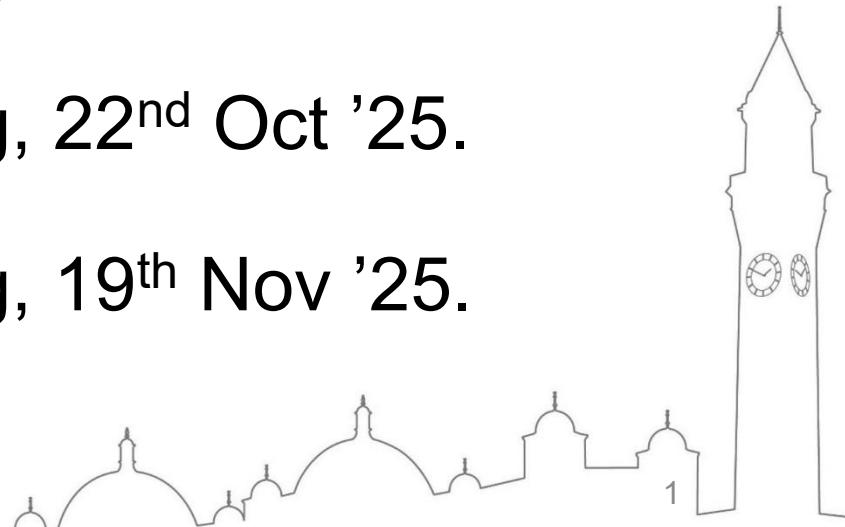


Design history

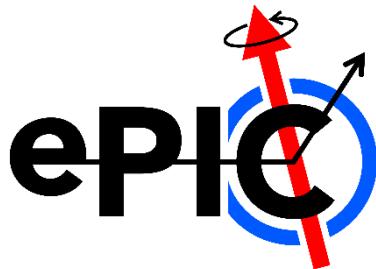


Board designs have progressed over the past year.

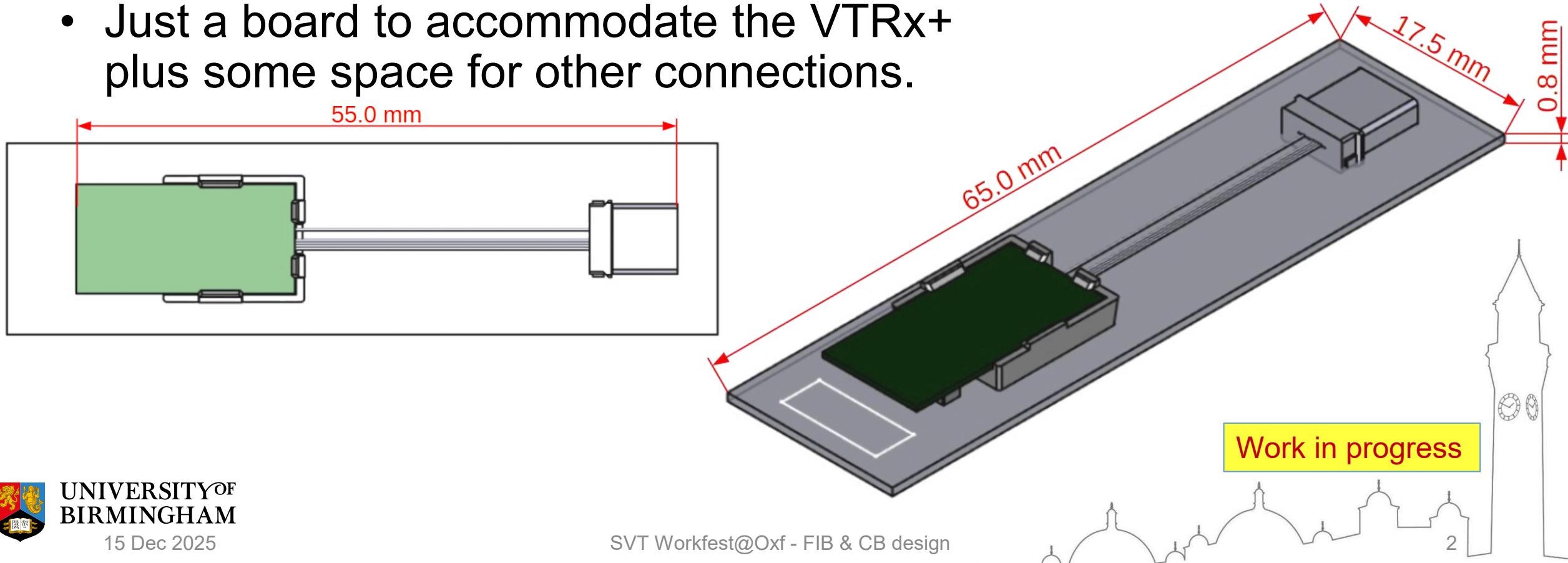
- J Glover, “[OB & disk readout](#)”, ePIC-CM@Frascati, Jan '25.
- J Glover, “[OB/disks RDO boards](#)”, SVT Workfest@SBU, Jul '25.
- J Glover, “[FIB update](#)”, EIC-UK WP1 meeting, 8th Oct '25.
- J Glover, “[FIB update](#)”, EIC-UK WP1 meeting, 22nd Oct '25.
- J Glover, “[FIB update](#)”, EIC-UK WP1 meeting, 19th Nov '25.



FIB design progression (initial)



- The FIB design has progressed a long way since Frascati.
- Just a board to accommodate the VTRx+ plus some space for other connections.

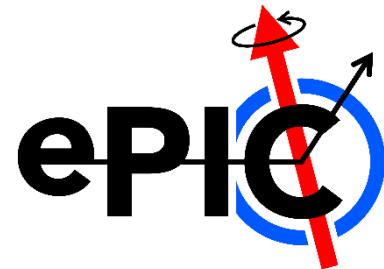


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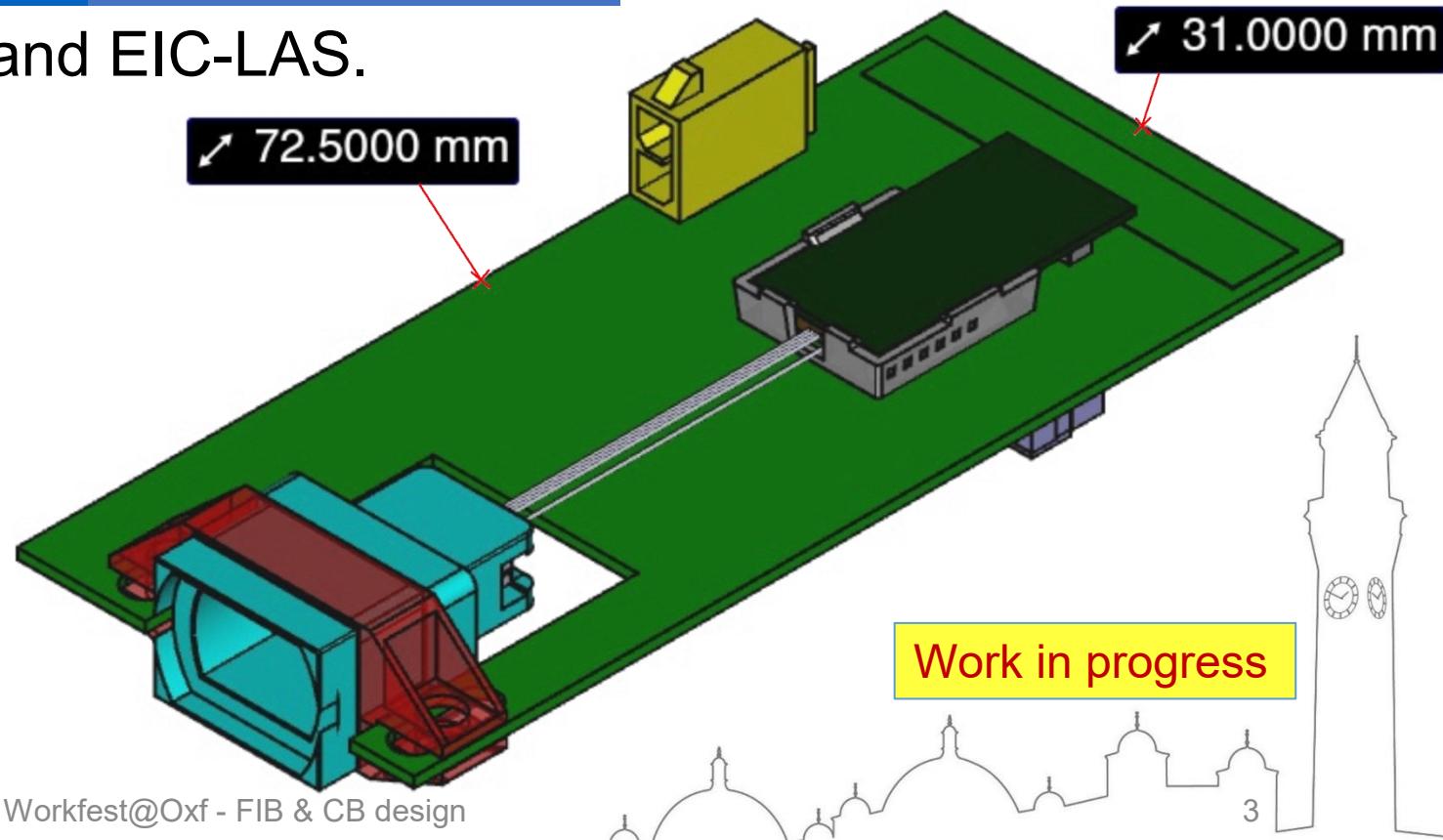
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SVT Workfest@Oxf - FIB & CB design

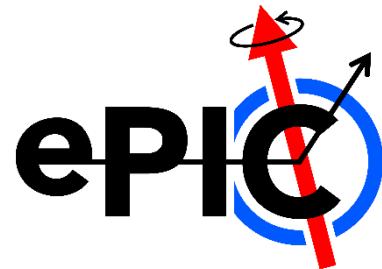
FIB design progression (intermediate)



- Cutout added for MTP connection to VTRx+ (incl. use of MT-to-MTP adapter and clamp to compensate pigtail variations).
- Connector added for CB-FIB interconnections.
 - Slow controls for AncASIC and EIC-LAS.
 - VTRx+ power.
 - VTRx+ controls.
- Connector added for serial powering supply.

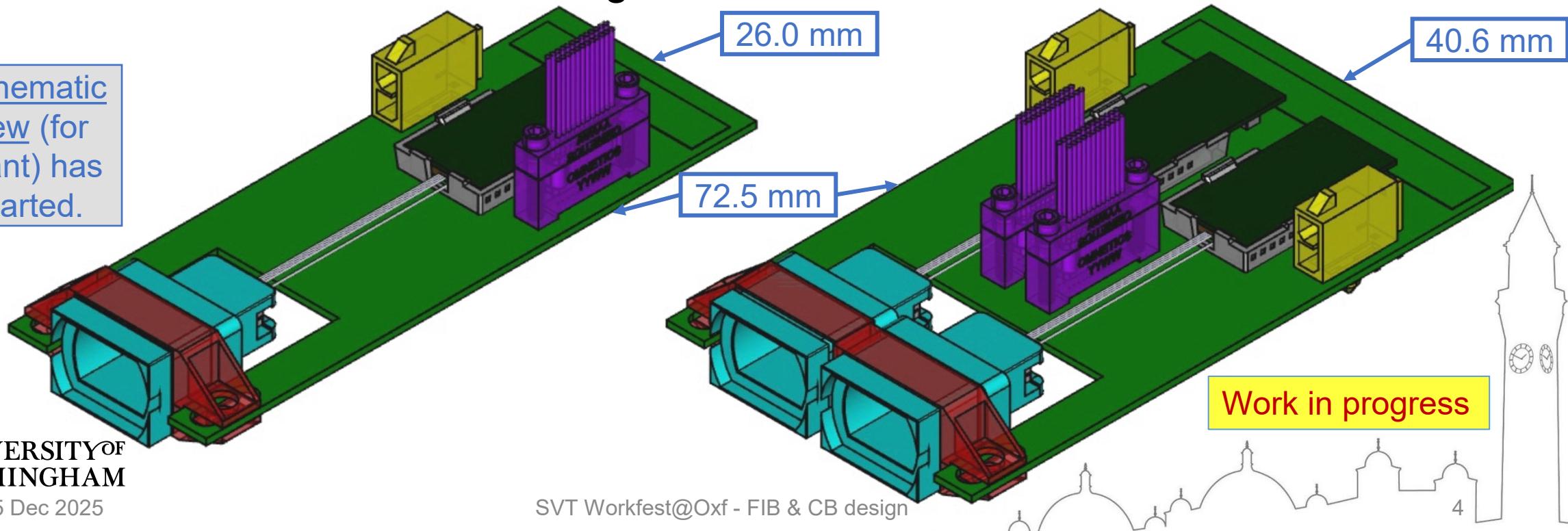


FIB design progression (latest)



- Considered optimisations for integrating into ePIC.
 - Switched to nano-D connector on top face (for CB interconnections).
- Separate design for L3 and L4.
 - L4 variant to 2×FIBs on a single PCB to save some area.

[PCB schematic overview](#) (for L3 variant) has now started.

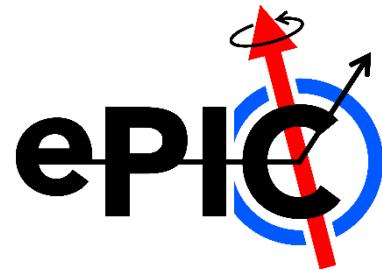


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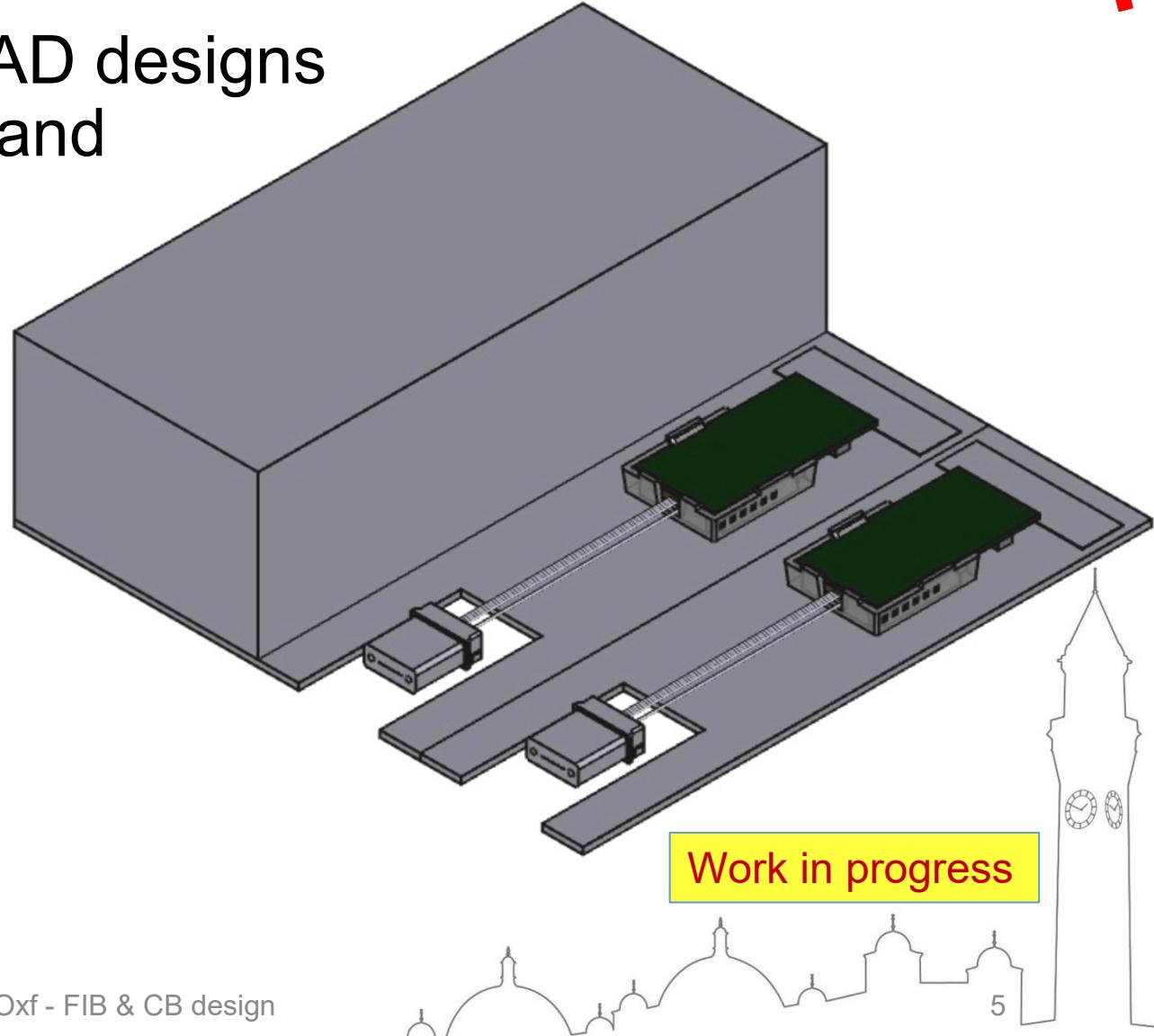
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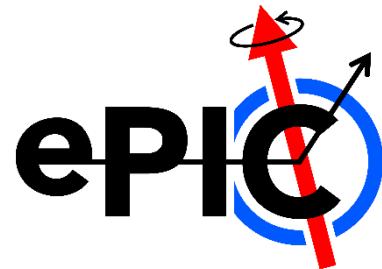
CB design progression (initial)



- Initial design was only to add CAD designs with generic volume ($2 \times \text{VTRx+}$ and volume for active components, mostly DC/DCs).
- Based around original FIB design (to house the VTRx+).

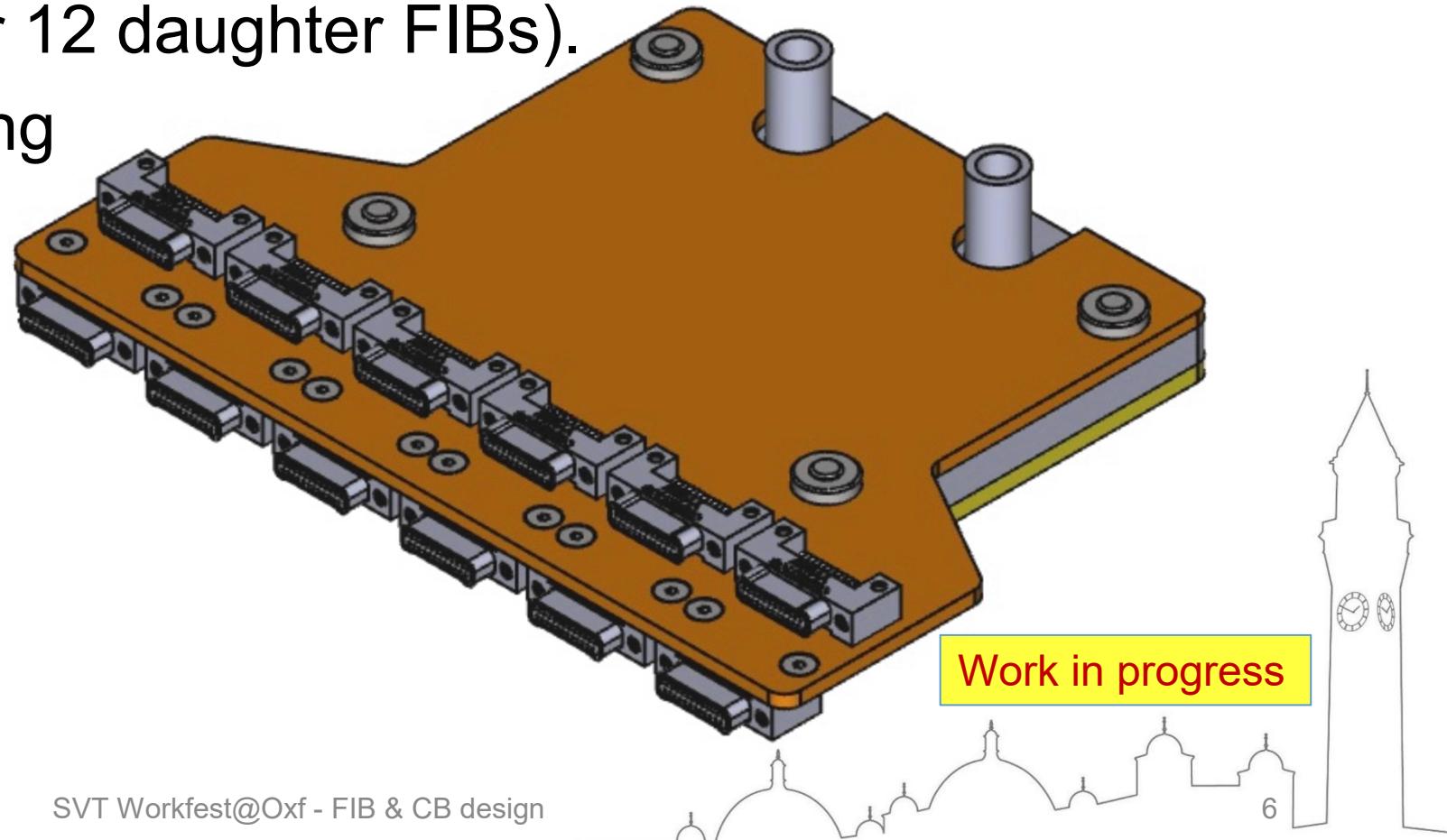


CB design progression (intermediate)

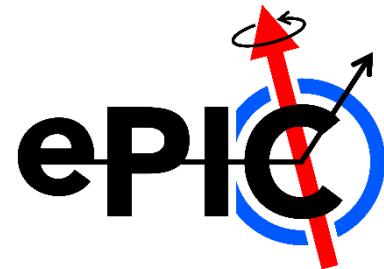


With the move to the nano-D connector for FIB interconnections, Adam Huddart (RAL) took on mechanical layout.

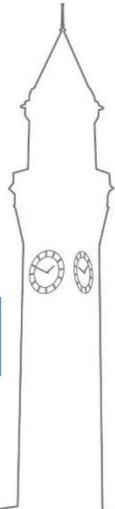
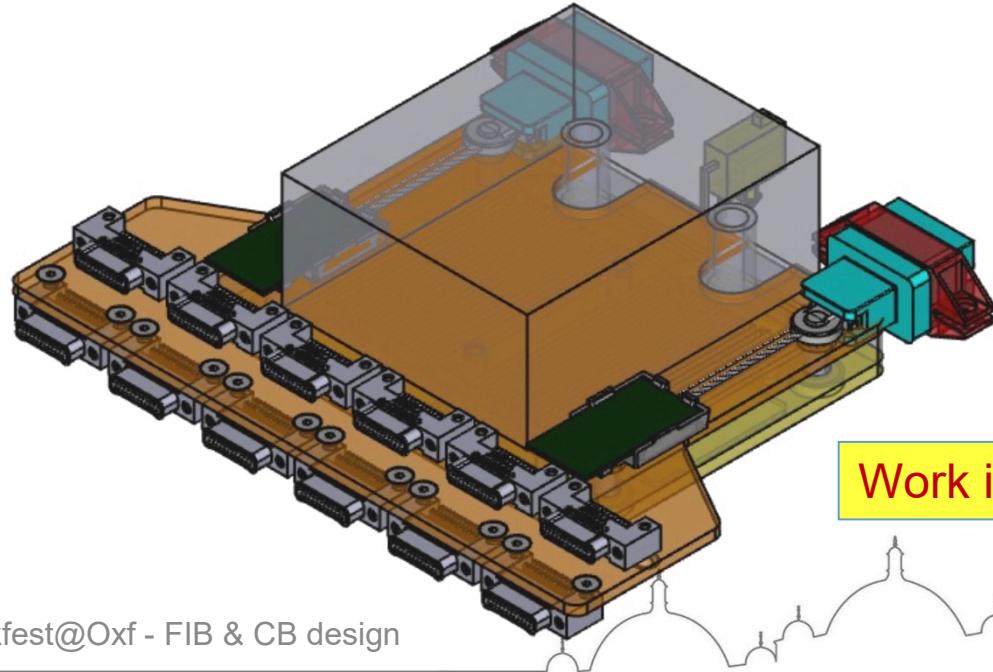
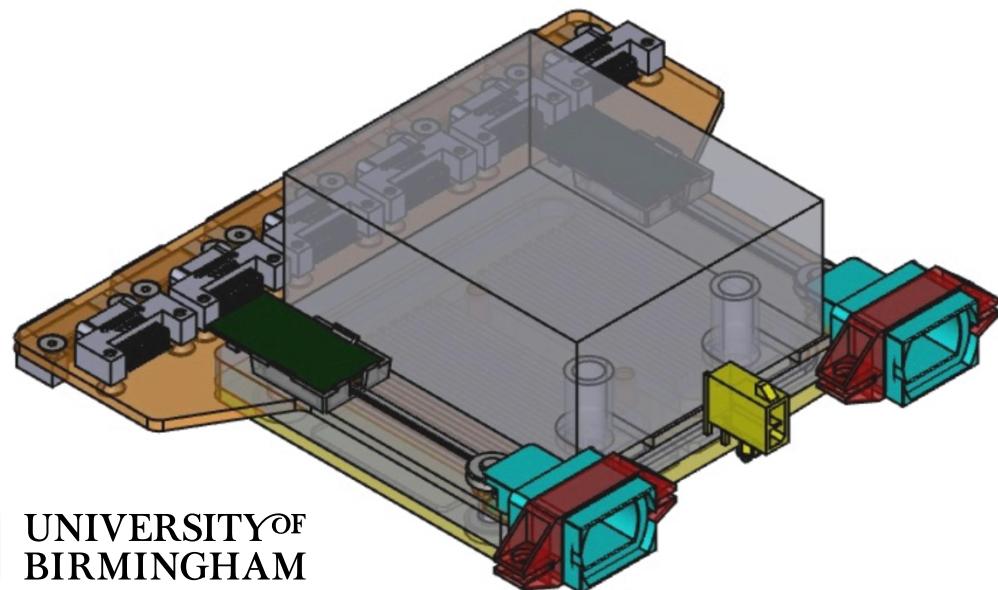
- Added 12 nano-Ds (for 12 daughter FIBs).
- PCB area approximating that from initial design.
- Initial cooling block (and connectors) considered.



CB design progression (extra components)



- Looked into adding the estimated active component volume.
 - Kept central to keep cooling block requirements minimal.
- Included 2×VTRx+ (with MTP adapters and clamps) and a power connector.
- Lacking some required length, but close!



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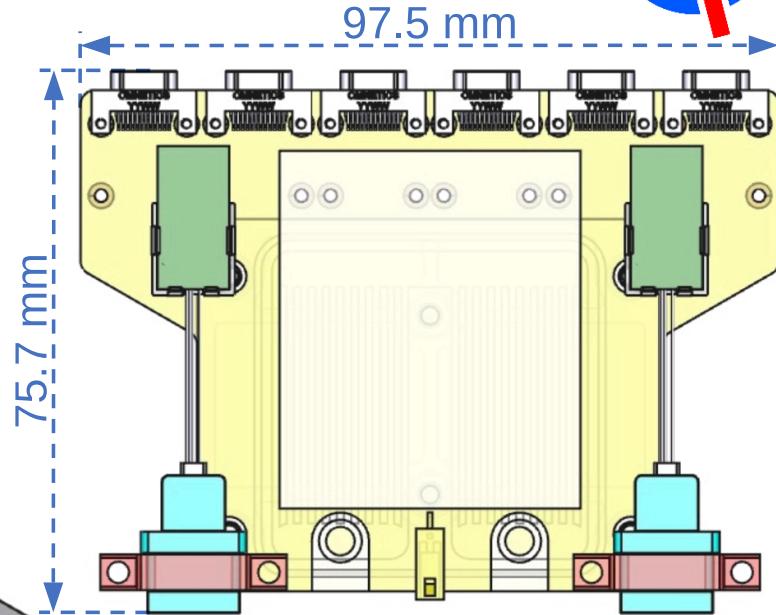
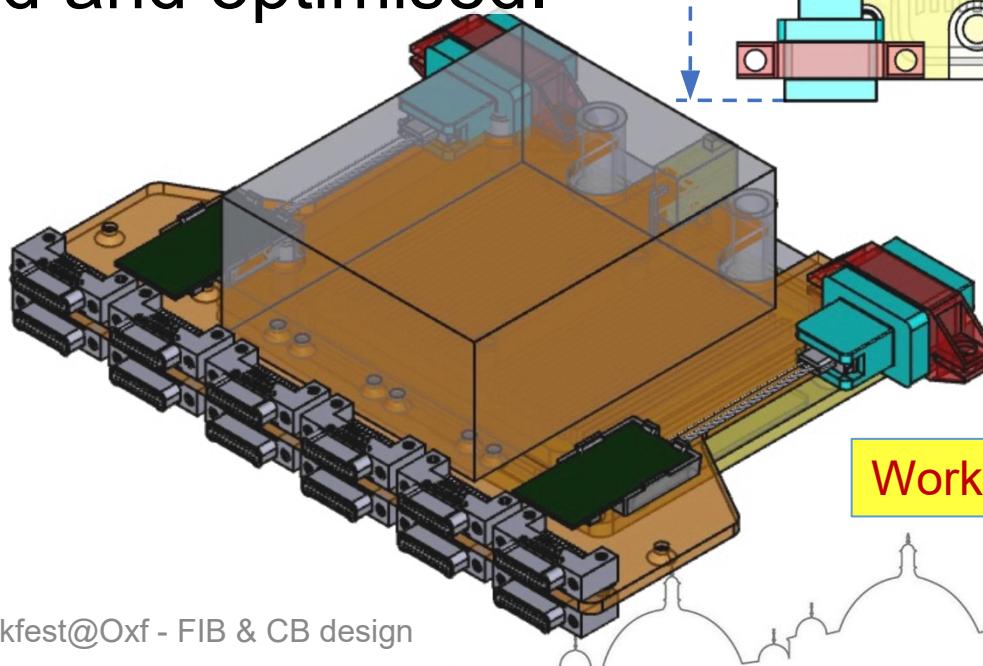
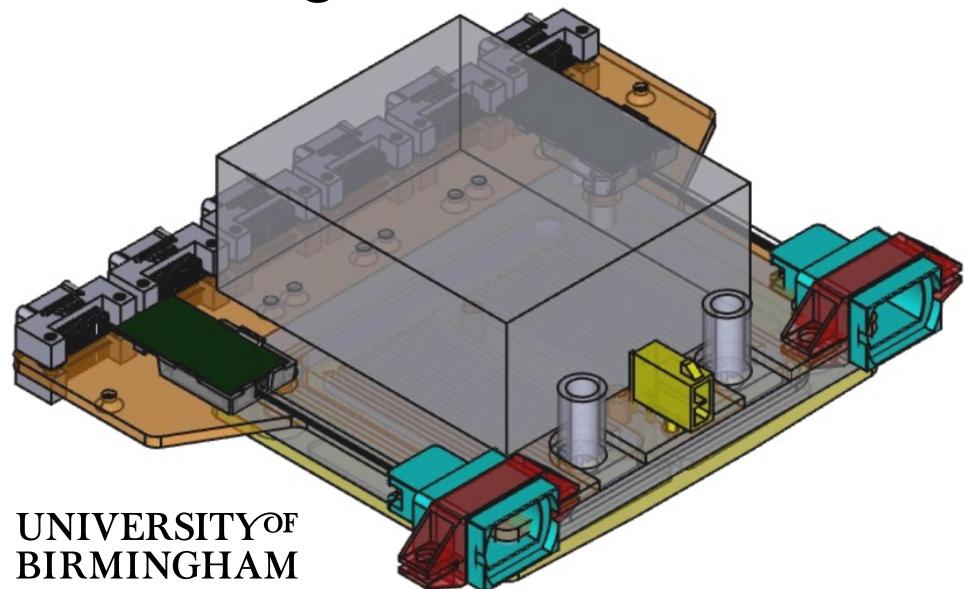
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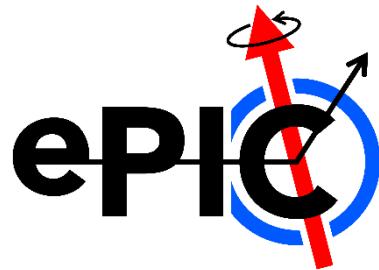
CB design progression (push nano-Ds)



- Nano-D connectors are surface mount, staggered layout not necessary (gains 10 mm).
- Board length is almost ideal.
- Squaring off the board gives enough width.
- Cooling block can be reduced and optimised.



Summary



- Most development of these board over 2025.
- Design of the FIBs and CBs are taking shape.
- Ever increasing realism in connectors.
- CB active components still needing work.
 - Confirmation of required PCB area with base-line components planned for early 2026.
- Board dimensions and connections should approximate specification needed for board integration.





Thank you very much!

Any questions?



Additional (support) slides

