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OB Modularity: towards a module definition

WP3 Electrical interfaces



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Outline

*Reporting a snapshot
of the evolutionary development
of the SVT & its modularity*

- Goal: raising awareness of the importance of modularity and embedding it in the design from an early stage.
- Why modularity?
- What are the important aspects of modularity?

Why modularity? (1/3)

- Goal: to reduce complexity by breaking the system into sub-units.
- Benefits!!!
- An increase in predictability of manufacturing rate (i.e. keep the project on track).
- Simplification of the assembly of the final product.
 - Sub-units are pre-assembled and pre-tested and mounted/interlinked in the final product;
 - Defects in sub-units are detected earlier in the production flow;
 - Easier to re-work problem;
 - Discard faulty components sooner and avoid wasting time;
- Reduced debugging complexity on the final product;

Why modularity? (2/3)

- common sense
- pragmatism



Grand total ~150 staves							
Layers	Staves	LAS Type	LAS/stave	No. of RSU/stave	Spares	Sapre staves	Total
L3	48	T6	8	48	20%	10	58
L4	74	T5	16	80	20%	15	89

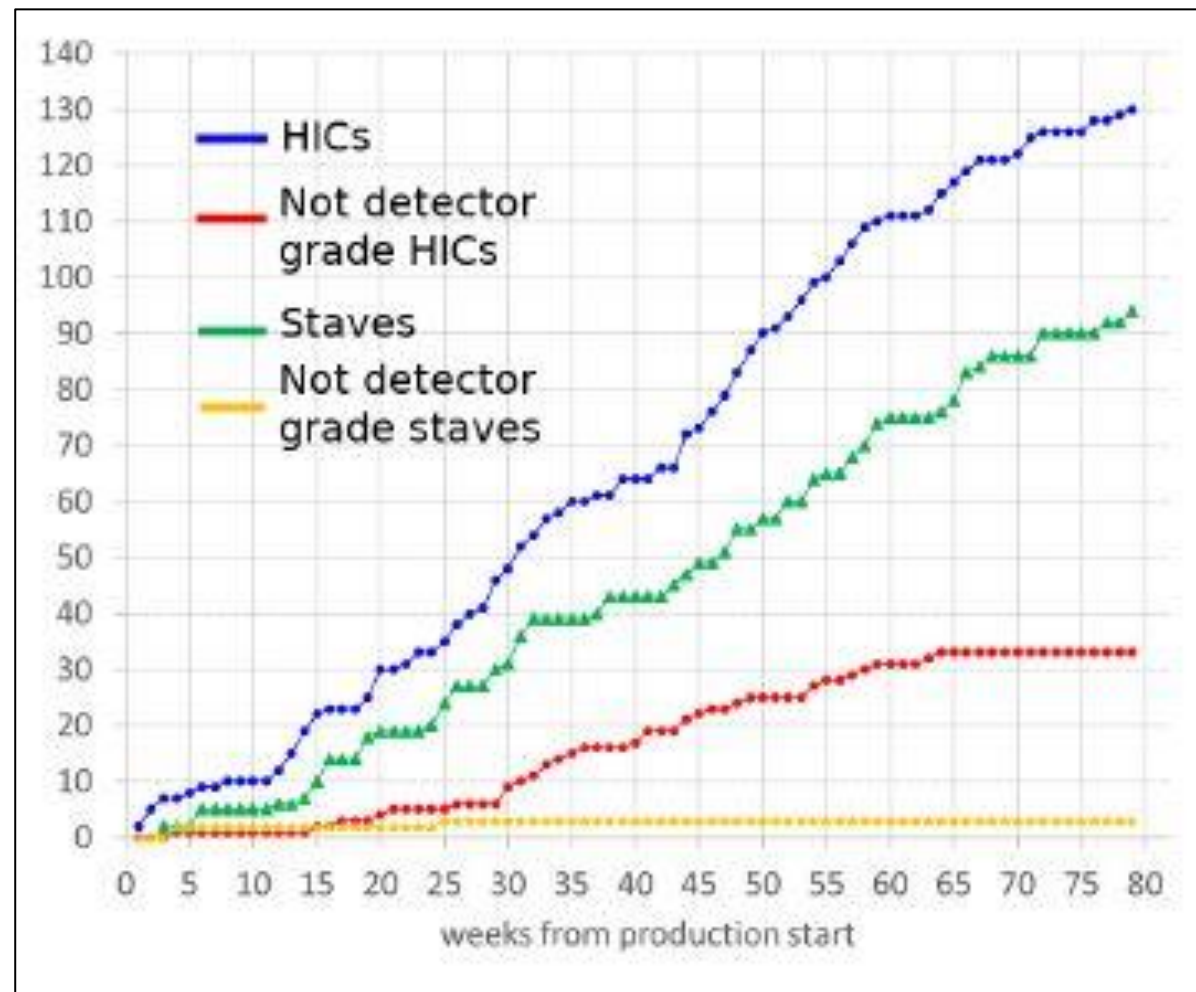
Uniqueness:

- The LAS is an electrically complex objects:
 - no previous example of LAS-type sensors for medium/large area barrels;
- The LAS operation in the Epic SVT **depends** on ancAsic;

Why modularity? (3/3)

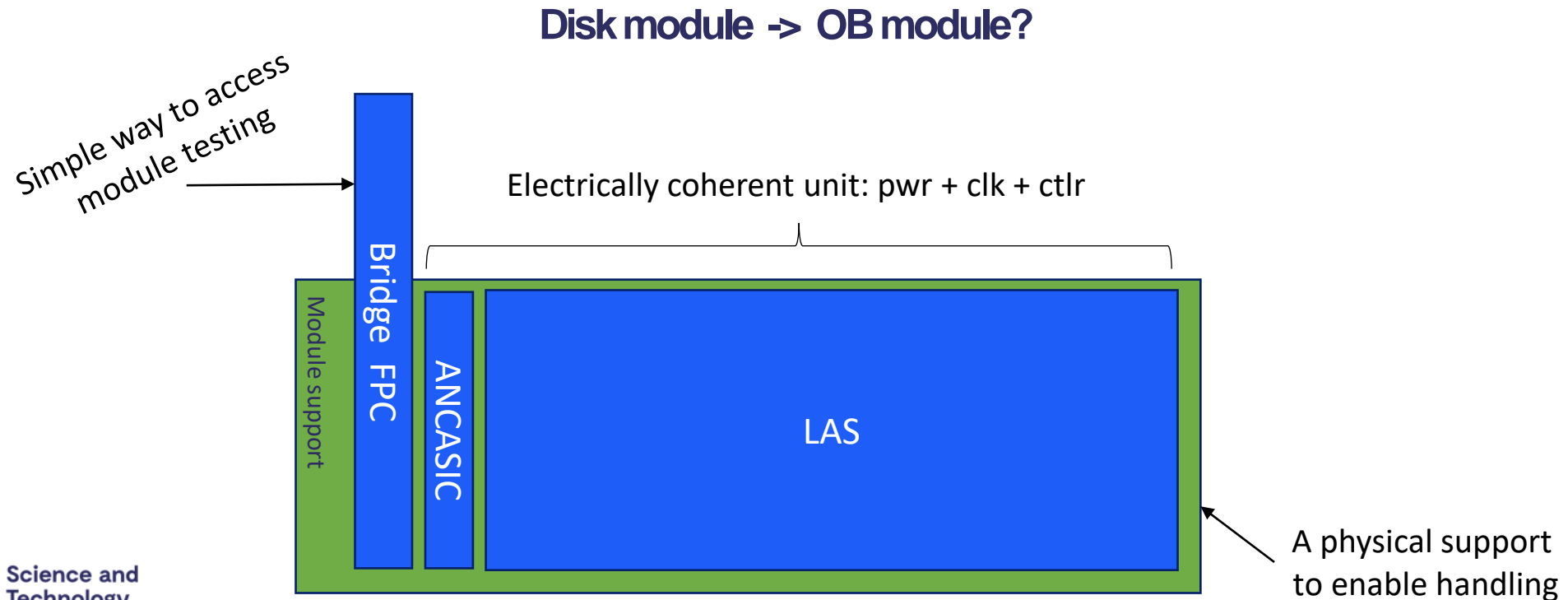
ALICE ITS2
IB HIC production rate.

Disclosed yield: ~75%

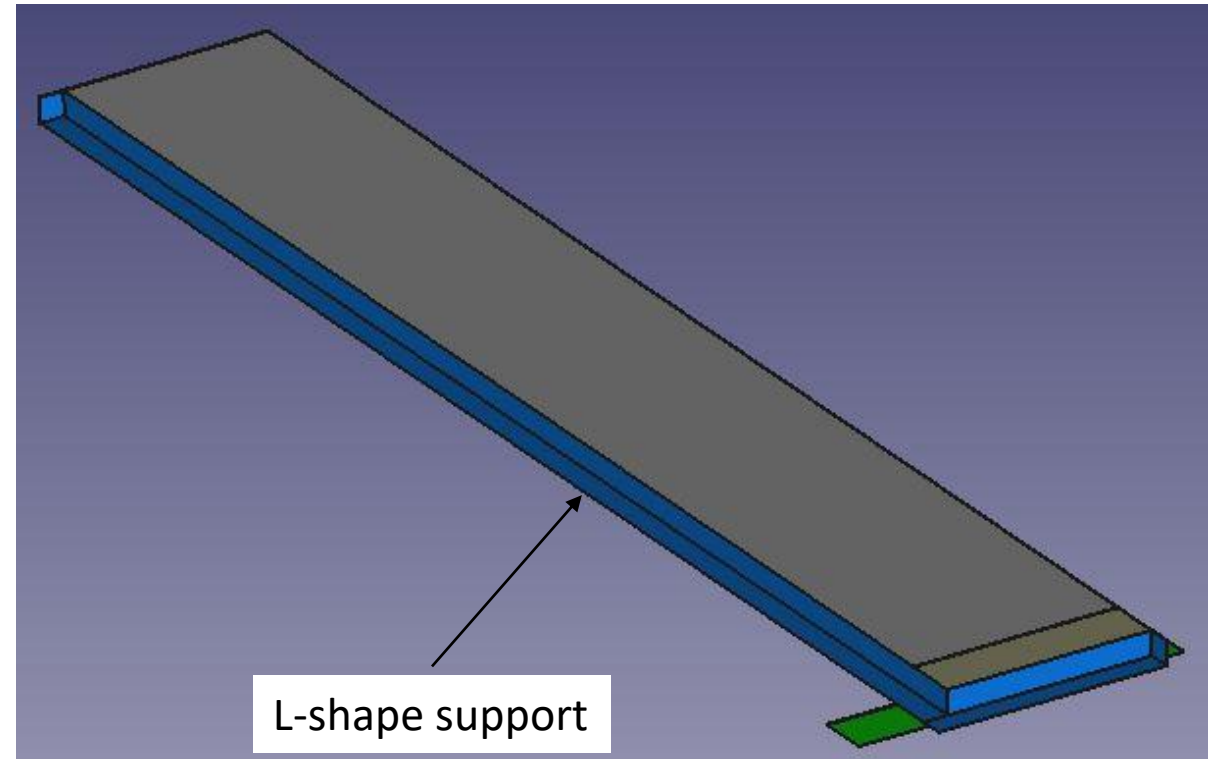
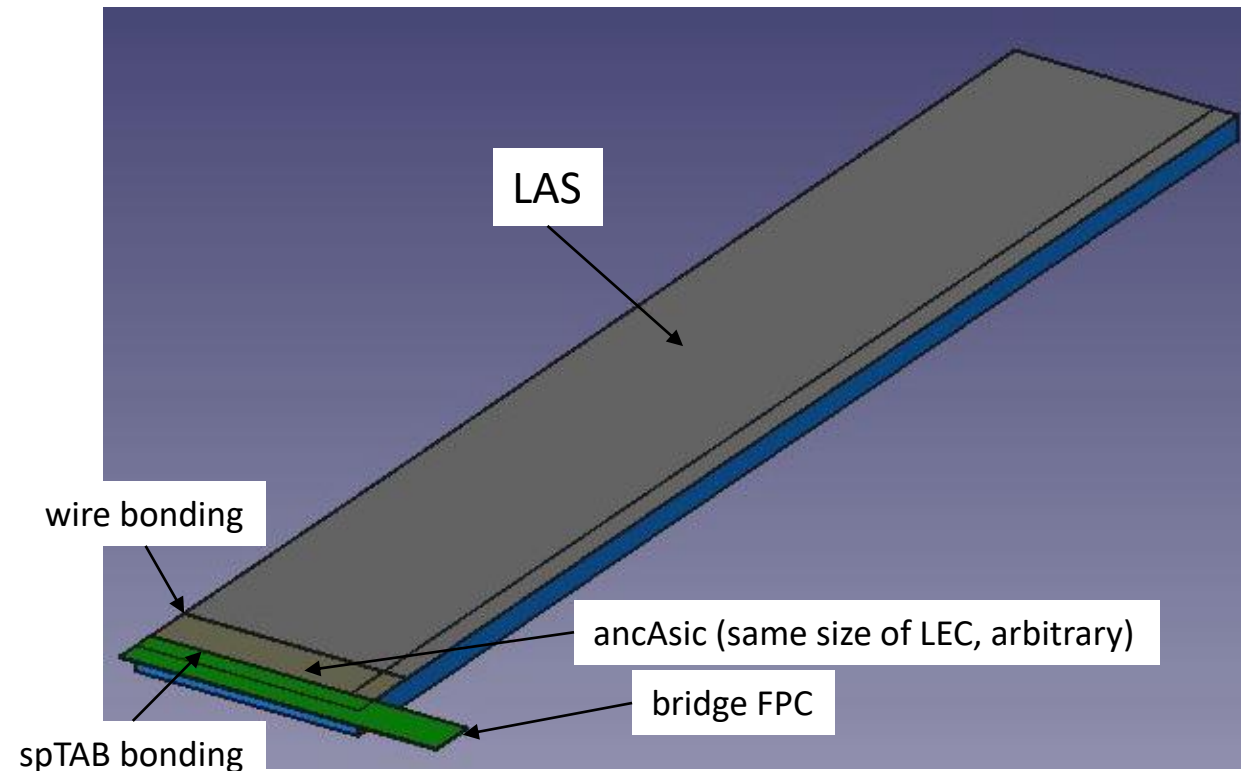


What are the important aspects of modularity ? (1/3)

- Goal: to identify a coherent sub-units from a functional prospective, and shape it into a design-for-manufacturing unit.



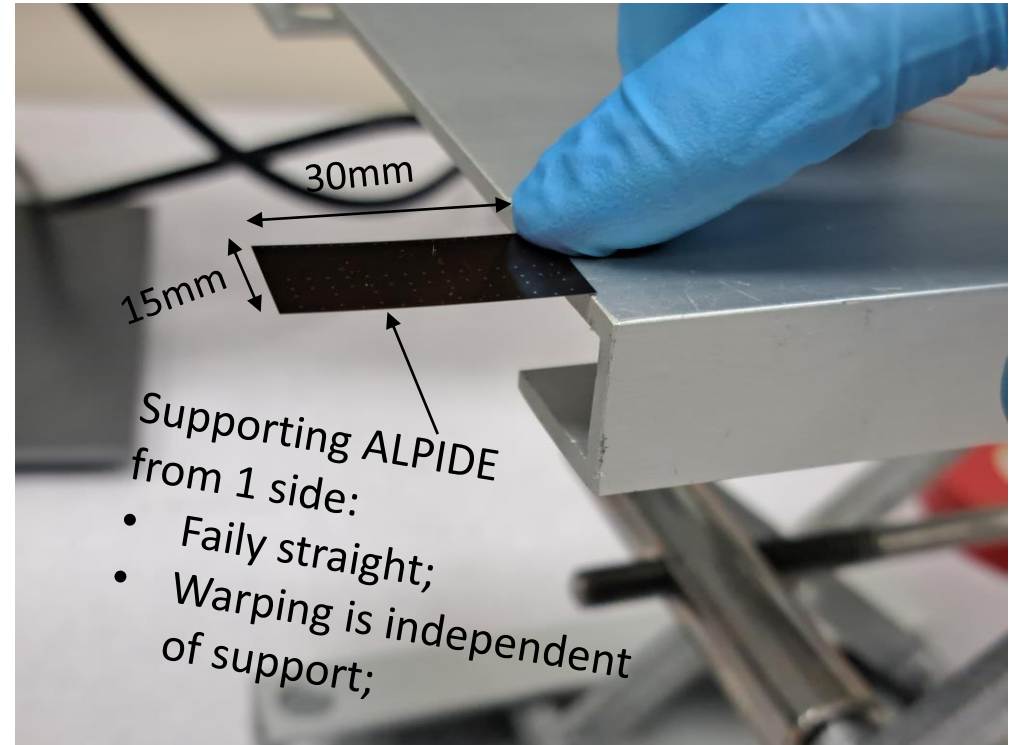
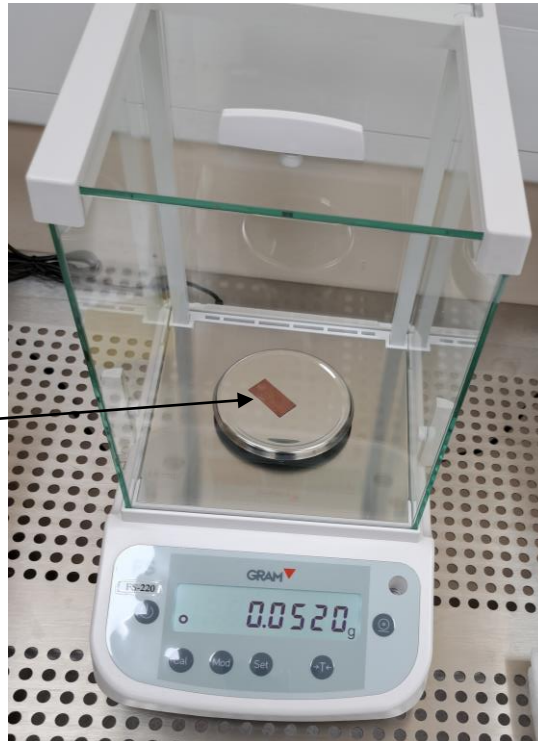
What are the important aspects of modularity ? (2/3)



What are the important aspects of modularity ? (3/3)

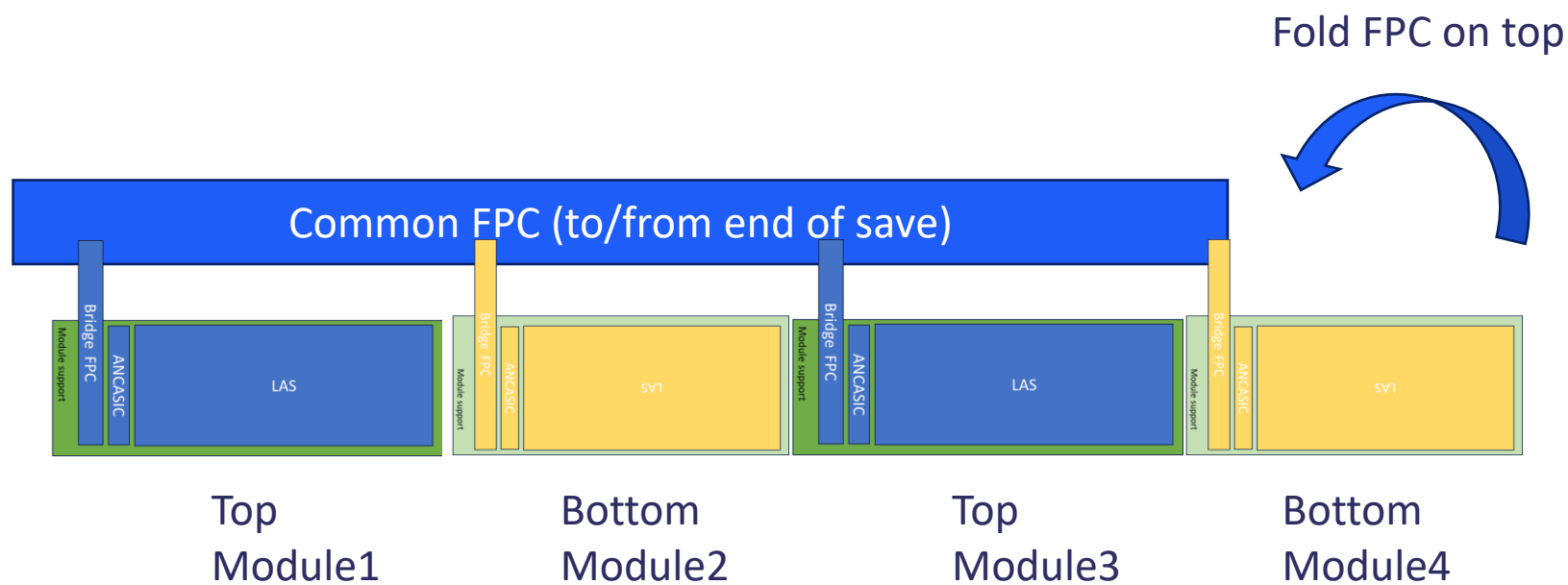
ALPIDE
30mmx15mm
50um thin

Weight of 50um thin ALPIDE:
Very light!



... the L-shape support can be a minimal structure, T5-LAS ~260 mg

Sketch of modularity on OB L4 1/4-stave



Conclusion

- Thoughts on modularity have been presented.
- Introducing modularity at an early stage of the design.
- Do we (OB community) think that modularity is important?
- If so, how do we achieve it?



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Thank you

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