FlexPCB: introduction

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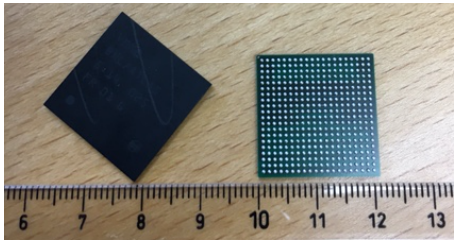
Why do we need a FlexPCB ?



- Already in GE1/1 there was the idea of a packaged VFAT3 chip
  - to improve the high-speed digital signal quality
  - signal quality especially important over 1m-long PCBs
- The package chip can be assembled on
  - VFAT3 hybrid
    - Much simpler hybrid design
  - GEB directly
    - Need a large oven
- In both cases we need a “connector” between the package and the ROB connector -> FlexPCB
  - A FlexPCB will definitely reduce any stress in the connectors

Why do we need a FlexPCB ?

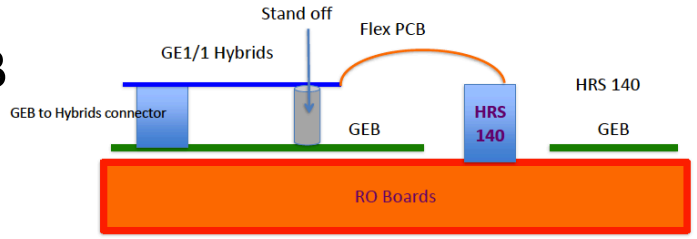
- Although for GE2/1 we could still use a VFAT3 hybrid for ME0 there is no space for an hybrid
  - Packaged VFAT3s have to be assembled on GEB and FlexPCB will connect it to ROB

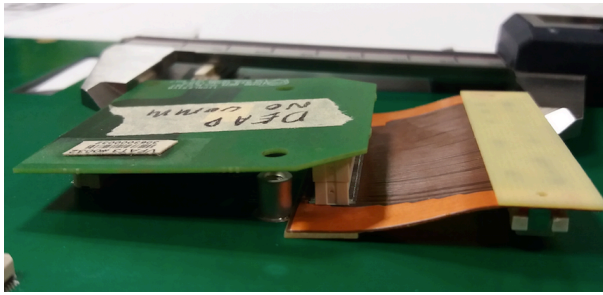
We need to design a FlexPCB

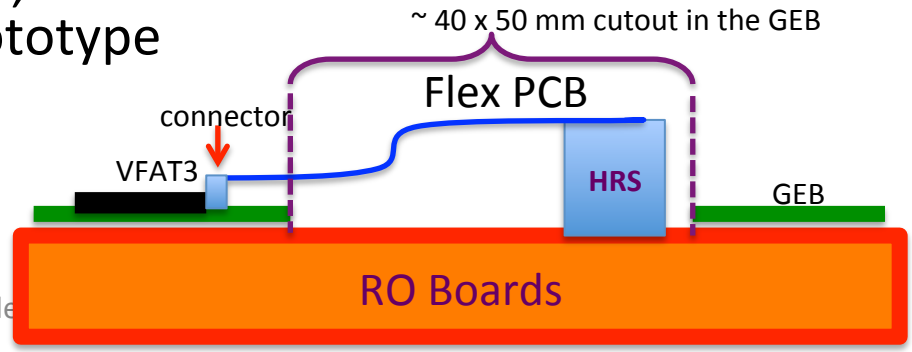
PS: GE2/1 ROB uses a new connector -> new VFAT3 hybrid would be needed or we use an adaptor (see Michele's earlier talk)

Possible R&D scenario

- Let's make a FLEX adapter board between ROB and VFAT3 hybrid.
- This way we can test FLEX technology and also use old technology for expediency, and ROB can remain unchanged.
- The first GE2/1 GEB prototype technology must be only an incremental change from GE1/1, and rather far from the final GE2/1 design (no BGAs yet, no FLEX connectors yet).
- This is good enough to test signal performance and GEM performance. The second prototype for GE2/1 GEB can add the BGA VFAT packages and the FLEX connectors to ROB.
- This also matches the OH GE2/1 plans, with first prototype using GBTx and second prototype expected to use LpGBT.







Prototype plan (on-going)

- Step 1 (end of 2018)
  - GE1/1 VFAT3 hybrid + adaptor + OH with GBT
- Step 2 (Q2 of 2019)
  - Packaged VFAT3 on hybrid + flex + OH with GBT/LpGBT
- Step 3 (Q4 of 2019)
  - Packaged VFAT3 on hybrid + flex + OH with LpGBT